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Teacher Perspectives on Integrating Technology in Early Childhood Classrooms

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Crystal Crozier

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Walden University
2021

Abstract

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by

Crystal Crozier

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Education

Walden University

June, 2021

Abstract

The integration of technology in early childhood classrooms can be advantageous when used in meaningful ways. Early childhood teachers are utilizing technology in instruction; however, they are not always doing so effectively. There is a gap in practice regarding the factors that affect the choices of technology activities that early childhood teachers use. A study on what influences the decisions early childhood educators make when choosing the types of technology to integrate in the classroom was necessary to fill the gap in literature and enhance the technology practices of early childhood teachers. Using Bandura's social cognition theory, the purpose of this qualitative study was to explore how and why early childhood teachers choose technology activities to integrate into their instruction. A descriptive case study was employed to gain an in-depth view of a small group of early childhood teachers. Criterion sampling was used to select eight early childhood teachers from grades PreK-2nd who had taught for 3 full years and were integrating technology in their classrooms. Data were collected through researcher-designed questionnaires and semistructured recorded interviews. The data were analyzed through first and second cycle coding. The key findings of this study were that early childhood teachers select technology activities based on perceived benefits and self-efficacy beliefs and often do not integrate technology activities due to developmental appropriateness, external barriers, and the belief that technology cannot replace the human element. The results of this study have the potential for bringing about positive social change by informing early childhood educators about effective applications of technology that could contribute to student achievement and engagement.

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Dedication

I dedicate this work to my loving family who has stood by me throughout this journey. To my husband Charles, thank you for always encouraging me throughout this process and understanding that some days I just needed to write, even if the house looked like a cyclone had descended upon it. To my beautiful daughters Peggy Sue and Louanna, I dedicate to this you as well. I hope that you understand that the days I spent doing "homework" were worth the hassle, and I hope you have learned from me that if you set your mind towards a goal, you can achieve it—even if it takes longer than you ever anticipated.

I also dedicate this dissertation to the loving memory of my mother Melinda Benton. You were a great mother who sacrificed so much for me throughout my life. It was because of you that I learned the value of an education and became a first generation college graduate. It is because of you that I am anything.

Acknowledgments

To my committee chair Dr. Beryl Watnick, thank you so much for all you have done for me. Your encouraging words made me feel like I was capable, and without them, I would have never been able to complete this dissertation. To my committee member, Dr. Donna Brackin, thank you for your expertise throughout this process. You and Dr. Watnick make a great team, and I am forever grateful for you both.

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Chapter 1: Introduction to the Study

Throughout the last 2 decades, the use of technology in the classrooms has become more widespread, even in the area of early childhood education (Tang et al., 2016). Effective technology integration with purpose and meaning can have many positive benefits with younger students (Bowen & Watson, 2017; Mustola et al., 2018; Quesenberry et al., 2015; Tang et al., 2016). It can be very beneficial and can help to increase both student achievement and student engagement in even the youngest of students (Bowen & Watson, 2017; O'Byrne & Pytash, 2017; Tang et al., 2016).

While there are several advantages of purposeful and meaningful integration of technology (Bowen & Watson, 2017; O'Bryne & Pytash, 2017; Tang et al., 2016), many early childhood teachers are not using technology in effective ways. Rather than using technology in intentional ways to support or enhance instruction and encourage higher order thinking, numerous early childhood teachers use technology as a means to digitally display information or have students work on computer programs for a specified amount of time (Smith et al., 2016). Furthermore, there is even less literature about how early childhood teachers perceive and implement technology within their classrooms, or if meaningful and purposeful technology practices are used (Smith et al., 2016).

The purpose of my study was to explore how and why early childhood teachers chose technology activities to integrate into their instruction. The results of this study add to the limited body of literature regarding the effective integration of technology in early childhood classrooms. Additionally, this study is influential because barriers that early childhood educators encounter when choosing the most appropriate technology activities

to implement in the classroom were discovered. This study has the potential for bringing about positive social change by informing early childhood educators about effective applications of technology that could contribute to student achievement. Chapter 1 will concentrate on background, problem statement, purpose of the study, and research questions. Additionally, I focus on the conceptual framework, nature of the study, definition of key terms, assumptions, scope and delimitations, limitations, and significance.

Background

Previously, technology was seen as an additional way to aid the instructional practices of teachers, including early childhood educators (Francom, 2016; Smith et al., 2016), but new research has indicated that technology is now seen as an imperative component of education as technology is now a factor of everyday life (Reigeluth et al., 2016). Even in the youngest of students, technology has the power to aid in the classroom. Technology is a powerful tool for student engagement (Bowen & Watson, 2017). Likewise, it gives even the youngest of learners an outlet for creative expression (O'Bryne & Pytash, 2017; Sinker, 2018). There is also research to indicate that early childhood students who are engaged with meaningful technology activities have more increased cognitive benefits than those who are not (Janisse et al., 2018).

Because of the benefits of technology on early childhood education, early childhood teachers should be mindful of the approaches taken to integrate technology in the classroom (Reigeluth et al., 2016). According to Lisenbee (2016), there is a gap in practice in the use of pedagogical activities employed by early childhood teachers who

integrate technology with purpose and meaning. The lack of this significant technology integration in early childhood classrooms is a cause for concern (Clements & Sarama, 2016; O'Bryne & Pytash, 2017; Smith et al., 2016), and teachers should be aware of the factors that affect the technology activities they choose (Lan et al., 2015). This study was needed because it provides information about how and why early childhood educators choose the technology activities they do.

Problem Statement

The problem is that early childhood educators are not always implementing technology in the classroom in meaningful ways (Dong, 2018). Technology has the ability to support both increases in student achievement and student engagement in early childhood classrooms, but it must be integrated properly (Lan et al., 2015; Tang et al., 2016). Effective technology implementation can help even the youngest of students to construct meaning, boost critical thinking skills, and merge prior knowledge with new found knowledge (Bowen & Watson, 2017).

While there is much research about how technology can benefit early childhood students when used in meaningful ways, there is little research to indicate how and why early childhood educators choose the activities they do (Edwards, 2016). Because most research has indicated that early childhood educators integrate technology in less intentional ways (Dong, 2018) and because there is little literature about the technology integration of early childhood educators, more research on how and why these teachers select technology activities to integrate into their instruction was needed.

Purpose of the Study

The purpose of this study was to explore how and why early childhood teachers chose technology activities to integrate into their instruction because technology was not always being implemented in meaningful ways. I address the types of activities early childhood teachers use in their classrooms as well as explore what might influence their choices. To address this study problem, a descriptive case study approach was taken, and data were collected through questionnaires and interviews.

Research Question

The following question guided this study:

1. (Research Question (RQ)1-Qualitative: What influences the decisions early childhood educators make when choosing the types of technology activities to integrate in the classroom?

Conceptual Framework

Bandura's (1986) social cognition theory is often used in educational settings and places emphasis on how the environment, one's own emotions, and cognition can influence a person's behavior (Bandura, 1977). According to Bandura's (1986) social cognition theory, both internal and external factors work together to influence behavior. Personal, environmental, and behavioral factors interact to determine the actions of people. Thus, this social cognition theory served as the conceptual lens for this study to understand how both internal and external factors influence how and why early childhood teachers choose technology activities to integrate into their instruction.

Bandura's (1986) social cognition theory supports the idea that individuals create a belief system about their own abilities based on both planning and motivation. According to Bandura, motivation is a behavior that is significantly impacted by external influences and can predict both successes and failures. Additionally, Bandura (1997) found that perspectives about situations can affect a person's actions in the same situations. Taking this into consideration, teachers' perspectives about technology usage can influence the amounts and types of technology used in the classroom (Clements & Sarama, 2016). These perspectives and influences and how they apply to early childhood educators' technology integration in the classroom will be further discussed in Chapter 2.

Bandura's (1994) social cognitive theory was used to explore how internal and external factors influenced an early childhood educator's motives and actions as they pertained to technology usage. By using this theory, I investigated a phenomenon in a real-life context. In this case, the technology activities chosen by early childhood educators were explored to see what influenced the decisions they made when choosing the types of technology activities to integrate in the classroom. An interview protocol that delves into questions pertaining to the interaction of internal and external influences (see Bandura, 1977) was used to discover how and why early childhood educators chose the types of technology to integrate in their classrooms. Moreover, the research question was informed by social cognition theory because it uncovered the internal and/or external influences that affected early childhood teachers' technology integration.

Nature of the Study

This research study was guided by qualitative research. At its core, qualitative research is the study of people and their actions. It is a formal, objective process to describe phenomena in their natural settings (Ravitch & Carl, 2016). It is also empirical and produces knowledge about perspectives (Kozleski, 2017), which was the primary focus of this doctoral study.

For this qualitative design, a case study approach was employed. A case study is useful when the researcher seeks to intensively study an individual, group, or unit in order to gain some understanding (Ravitch & Carl, 2016). Because I was seeking to understand the types of technology used in early childhood classrooms and what factors might influence early childhood educator's choices of technology activities, a case study approach was appropriate (Ravitch & Carl, 2016).

Specifically, a descriptive case study was used to determine how internal or external factors influenced the selection of technology activities by early childhood educators. A descriptive case study is appropriate to investigate a phenomenon in a real-life context (Ravitch & Cark, 2016). While there was some research that indicated that early childhood teachers have been implementing technology in the classroom (Edwards, 2016; Mustola et al., 2018, Quesenberry et al., 2016), a descriptive case study was appropriate to discover the types of technology these educators were using and explore exactly how different factors impacted the selection of technology activities.

I conducted my case study with a group of early childhood educators in grades Pre-K through second grade at a single school. Participants were first given

questionnaires and later asked to participate in interviews. Combined, these data collection methods helped me to understand how and why early childhood teachers chose technology activities to integrate into their instruction. Data was analyzed using coding methods to identify emerging themes from the data.

Definitions

The following terms are used throughout this research and are defined below for purposes of the study:

Social cognition theory: The theory that states that learning occurs in a social context and is affected by interaction, environment, and behavior (Bandura, 1986).

Student engagement: A term used to describe when students are actively involved in the learning process (Halverson & Graham, 2019).

Technology integration: The act of using technology and technological tools in daily instructional practice (Smith et al., 2016).

Assumptions

In this study, I made several assumptions. Based on prior experiences before this study, I assumed that all early childhood educators who participated would have integrated technology in some form in their classroom. I also assumed that even though they were integrating technology in instructional practice, they were not doing so in meaningful and purposeful ways. In my own school, I had witnessed most early childhood teachers using technology in their classrooms primarily as a means to display information and as a center rotation to complete drill type computer programs with little critical thinking involved. Another assumption I had is that when I conducted my

interviews, all participants would answer honestly. Participation in the study was

voluntary, so this assumption was based on the idea that these teachers would want to aid

in the research process. All of these assumptions were necessary and were noted in the

research because these assumptions could not be proved (see Ravitch & Carl, 2016).

Scope and Delimitations

This study was conducted with early childhood teachers in one school district: the

Southern Peach School District (pseudonym). Teachers were selected on the following

conditions:

1. Teachers must be teaching in the field of early childhood education (grades

   Pre-K through second grade).

2. Teachers must have 3 or more years of classroom experience.

3. Teachers must be working in the Southern Peach School District.

4. Teachers must have access to and a working knowledge of technology

   integration.

5. Teachers must be currently integrating some form of technology in the

   classroom.

Delimitations are factors that I consciously controlled while creating my research

plan. They were based solely on my decisions (see Ravitch & Carl, 2016). There were

many other problems that I could have chosen, but because of my own personal interests,

I chose to address the technology integration of early childhood educators. Another

delimitation is that I was only studying early childhood educators. This range was

specifically chosen because I was pursuing an Early Childhood Education degree;

therefore, I had to choose teachers of these grades. Likewise, for this study, I chose a rural southwestern school. This was due to the proximity of my own home and workplace, and because of feasibility and transportation, I could not choose another area. Because of these delimitations, the results of this study are transferable only to educators who (a) teach in grades Pre-K through second grade, (b) teach in a rural, southwestern community, and (c) have at least 3 years creditable teaching experience and integrate technology in the classroom.

Limitations

Pyrczak (2016) described limitations as factors that could potentially weaken the validity of a study. One limitation was that the study was conducted in one rural southwestern school district with a small number of participants teaching grades Pre-K through second grade. The small sample size could potentially limit the findings that could be made about technology integration in early childhood settings. Because the participants are from a rural, southwestern school, this may limit the transferability to other contexts.

Another limitation was the skill level and knowledge of the early childhood educators being studied as well as the available technology in the school system. These skill and knowledge levels could potentially influence the amount and kinds of technology integrated in early childhood classrooms. Additionally, the availability of technology in classrooms could influence the frequency and types of technology used in early childhood settings.

There was also a limitation in my research design. Because I employed a case study design, I cannot rule out other causes for technology integration in early childhood classrooms. A case study only allowed me to generalize the findings to the particular group I was studying (see Ravitch & Carl, 2016).

Significance

Limited research has been conducted on the integration of technology in early childhood education settings; however, the body of research that does exist has shown that integrating technology with purpose and meaning can have many positive benefits with younger students-- creating active, engaged learners (Bowen & Watson, 2017; Mustola et al., 2018; Quesenberry et al., 2016; Tang et al., 2016). Moreover, there is even less literature about how early childhood teachers select and implement technology within their classrooms (Dong, 2018). While internal and external influences have been reported to affect the amount of technology integrated into classrooms, little research exists to determine if they influence the selection of technology activities integrated in early childhood settings (Edwards, 2016). The results of this study add to the limited body of literature regarding the effective integration of technology in early childhood classrooms and how these internal and external factors influence such integration.

My study also has the potential to create social change. By better understanding outside influences and how they relate to the choices early childhood teachers make when selecting technology activities, plans can be implemented by school districts to increase opportunities to improve the confidence levels of early childhood teachers, thus affecting the technology instructional activities employed. When early childhood teachers begin

using technology in more meaningful and purposeful ways, early childhood students will

benefit. Student engagement and achievement will grow.

Summary

Even though technology is being used in early childhood classrooms (Edwards,

2016; Smith et al., 2016), it is not always being used in the most meaningful and effective

ways (Bowen & Watson, 2017). When used with meaning and purpose, technology has

the power to create learners who are truly involved in their own learning (Bowen &

Watson, 2017; Tang et al., 2016). The current inclination for early childhood teachers to

use technology as a standalone method in computer stations has discouraged young

students from using higher order thinking skills when using the technology and more

meaningful integration would increase their critical thinking and increase student

achievement (Smith et al., 2016).

Both internal and external factors could be barriers to the integration of

meaningful and purposeful technology activities in early childhood classrooms (Clements

& Sarama, 2016; Li et al., 2016). There is already research to prove that technology

integration is frequently occurring in early childhood classrooms (Joo et al., 2018), but

there is a gap in research about the types of technology being integrated in these

classrooms and the factors that affect the choices of technology instructional activities

that early childhood teachers use with their students. A research study like this will help

to fill that gap and potentially improve the technology classroom practices of early

childhood educators. Chapter 2 will focus on a review of the literature as well as

reinforce the problem statement, purpose, and questions.

Chapter 2: Literature Review

Early childhood educators are not always implementing technology in the classroom in meaningful ways. The purpose of this study was to explore how and why early childhood teachers choose technology activities to integrate into their instruction. This literature review provides a synthesis of the conceptual lens, research goals, and key variables and concepts related to this research study. These variables and concepts are benefits of technology, contributions to learning and development in early childhood settings, integration of technology in early childhood settings, barriers to technology integration, teacher perspectives of technology, and teacher decision making with technology. Additionally, it addresses the gap in literature on how and why early childhood educators implement technology in classrooms.

This descriptive case study centers around the following question as it pertains to early childhood educators: What influences the decisions early childhood educators make when choosing the types of technology activities to integrate in the classroom? While there is much research to support the benefits of using technology in early childhood settings (Bowen & Watson, 2017; Nkosi et al., 2019; O'Bryne & Pytash, 2017; Tang et al., 2016), research has also denoted that early childhood teachers are often using technology in less than effective ways (Altun, 2019; Dong, 2018). There is little research to support why early childhood teachers choose the types of technology activities they integrate in the classroom (Mantilla & Edwards, 2019; Mertala, 2019).

In this chapter, I explain my literature search strategy and focus on the conceptual framework of social cognition theory as proposed by Bandura (1977). Additionally, I

provide a review of the literature that synthesizes key concepts and variables, producing a description about what is known about technology integration in early childhood classrooms.

Literature Search Strategy

The literature review for this study was conducted using the research databases accessible through the Walden University Library. I examined peer-reviewed journal articles, books, and white papers. The search engines and databases I used included Education Source, ERIC, Sage Journals, Academic Search Complete, Education Research Complete, and Google Scholar.

The keywords and phrases I used to search for resources included *early childhood education, technology, instructional technology, teacher perspectives, digital learning, technology integration,* and *computer instruction.* Oftentimes, these terms were used in combination to obtain desired results. The following combination of terms were also used: *technology integration in early childhood classrooms, teacher perspectives of technology integration, effective integration of technology, use of technology by early childhood teachers, technology in early childhood settings, early childhood education and technology implementation, early childhood educator technology practices*, and *teacher decision making with technology.*

Conceptual Framework

For this study, I chose Bandura's (1986) social cognition theory as the conceptual framework. This theory is often used to investigate how people learn to change throughout their lives (Bandura, 1986). This theory was appropriate for this study

because it emphasizes several influences on human behavior—cognitive, personal, and

external environmental factors (see Bandura, 1982). Of these factors, Bandura (2006)

believed that personal factors were the most influential (Bandura, 1977; Lim et al., 2018).

The social cognition theory, thus, was an appropriate framework to provide a general

understanding of the choices early childhood teachers make when choosing technology

activities to integrate into their instruction (see Lan et al., 2019).

Reciprocal Determinism

One tenet of Bandura's (1986) social cognition theory is reciprocal determinism.

In reciprocal determinism, three factors influence behavior—cognitive, personal, and

external factors. According to this theory, the behavior of an individual affects social

relationships and personal characteristics, but due to reciprocity, social relationships and

personal characteristics also affect the behavior of the individual. While cognitive

processes play a large role in determining individual behavior, external social stimuli also

affect the individual and the behavior. Of the three factors, no one factor can be

independent of the two others. They interact together and are equally important in

influencing the individual and the behavior (Bandura, 2005).

Symbolizing Capability

According to Bandura's (1986) social cognition theory, external factors can

influence behavior by using cognitive processes. Moreover, Bandura concluded that

individuals form symbols—like mental images and words—to give meaning to their

experiences. This allows individuals to more readily store information in memory to aid

them in future behaviors. This formation of symbols allows individuals to more easily

model the behaviors they observe. Creating these symbols also enables the individual to problem solve and have foresight. Foresight means that the individual can visualize the consequences of their behavior before actually engaging in the behavior (Bandura, 1991).

Vicarious Capability

While individuals learn much from directly experiencing something, observing others allows the individual to form an idea about a behavior while not actually experiencing the behavior themselves (Bandura, 1986). By observing others, individuals can form more symbols to aid in their future experiences. This is called vicarious learning because individuals learn simply by observing others (Bandura, 1986, 1991).

Vicarious learning is impacted by four different processes: attention span, retention processes, motor reproduction processes, and motivational processes (Bandura, 1977, 1986, 1991). Attention span refers to an individual's capability to actually observe the behaviors of others in their environment. Retention processes refer to an individual's ability to retain observed behaviors and form symbols, and motor reproduction processes involve taking these formed symbols and creating an action to go along with the symbol. Finally, motivational processes involve determining the value of the outcome to determine if the individual will adopt a certain behavior for future use (Bandura, 1989).

Forethought Capability

Forethought, according to Bandura (1989), is a driving force in human behavior. Forethought is an individual's ability to guide their actions by anticipating the outcome of the actions. This prediction is regulated by prior experiences because future events do not create much motivation for current thoughts, so the expectation of the behavioral

outcome becomes more important than the actual outcome. This forethought capability allows individuals to anticipate consequences (Lawson, 2019). These forethoughts do not just come from an individual's prior experiences. The experiences of others also help individuals anticipate outcomes; therefore, people will behave in ways they have seen others be successful while avoiding behaviors they have seen cause others failure (Bandura, 2005).

Self-Regulatory Capability

Self-regulation is an important part of Bandura's social cognition theory. Self-regulation is the individual's ability to manage their behaviors and actions despite external factors (Bandura, 1986). Self-regulation is motivated largely by personal values and standards and by the need to feel a sense of accomplishment. Because of this, self-regulatory processes involve individuals exploring their own thought processes and using their mental abilities to exercise control over their actions and behaviors to assure they achieve a set goal or desired outcome (Mammadov et al., 2018).

Self-Reflective Capability

Self-reflection is another vital component of Bandura's social cognition theory. Self-reflection involves individuals thinking about their thought processes and changing their behaviors and actions based on this thought process (Bandura, 1977). Self-efficacy, according to Bandura (1997), is the most important kind of self-reflection. Self-efficacy is a term to describe an individual's perceptions of their abilities and characteristics, and these perceptions guide their thought processes. Self-efficacy is created when an

individual excels in a certain area, and it is also created when individuals compare themselves to others (Bandura, 1986, 1997).

Observational Learning

At the core of the social cognition theory is the idea that learning occurs through observation (Bandura, 1977). Behavioral, social, and cognitive constructs are created when one observes, and these constructs will shape all future endeavors (Bandura, 1982). Bandura (1986) identified three types of observational learning. They are live models, verbal instructional models, and symbolic models. A live model means an actual individual is observed completing a task. With a verbal instructional model, behaviors are described and explained verbally, and with symbolic models, observations are made from fictional characters, like television and books. Even though Bandura (1977) proposed that observation was key to learning, he also surmised that just because something had been learned did not mean that the behavior would change.

Application of Bandura's Social Cognition Theory

Bandura's social cognition theory has been applied in previous research, especially in the field of educational technology. According to Devi et al. (2017), Bandura's social cognition theory is an appropriate conceptual lens because educators learn through observation, and their behaviors, including the activities they integrate in the classroom, are a result of the environment and person. When exploring preservice educators' intent to use computer-based technology, Kim et al. (2008) based their research on Bandura's social cognition theory and discovered that preservice teachers' perspectives of computer use were based on faculty modeling in their college courses.

Also, Bandura's social cognition theory was used in a research study to investigate university faculty and their motivation to teach online (Wright, 2014), and it was discovered that both internal and external factors contributed to the willingness of faculty to teach online courses. High school educators' use of social media in the classroom was explored, and Bandura's research was applied to discover that the use of such technology is affected by both internal and external factors (Deaton, 2015).

This research study benefited from the use of Bandura's social cognition theory. In this study, I explored the integration of technology in early childhood classrooms to find out what influences early childhood educators to choose the activities they integrate in their classrooms. Because Bandura's theory deals with internal and external factors that influence decision making (Bandura, 1977, 1982, 1986, 1997), it was an appropriate conceptual framework to guide the research.

Key Concepts and Variables

Benefits of Technology in the Classroom

Technology in the classroom is not a new idea; however, today, it is more prevalent in classrooms (Arnott, 2017; Oakley et al., 2018; Papadakis et al., 2018). While this is largely due to the increasing use of technology in all other aspects of life, there are many reported benefits of integrating technology in educational settings (Hur & Wolf, 2017; Neokleous, 2019). These benefits include increased student achievement (Hur & Wolf, 2017; McDermott & Gormley, 2016;; Rashid & Asghar, 2016; Tawafak et al., 2019;; Zhuang & Xiao, 2018), greater student motivation (Retails et al., 2018), and improved communication (McKnight et al., 2016; Xiong, 2018).

Increased Student Achievement

In the past two decades, much research has been conducted that demonstrates that technology integration in the classroom has the ability to increase student achievement (Dunn & Kennedy, 2019; Huang & Lin, 2017; Ige & Hlalele, 2017; Lin, 2019; Rashid & Asghar, 2016). In fact, increases in all academic subjects have been noted, with increases in science and math most notable (Xiong, 2018). A study by Al Khateeb (2019) investigated the effects of mobile gaming on the mathematics achievement levels of fourth grade students. Two groups of students were taught using two different methods. An experimental group was taught the mathematics concepts using mobile gaming while the control group was taught using conventional classroom instruction without the use of technology. Then an achievement test was created based on the National Assessment of Educational Progress (NAEP) levels and objectives for mathematics. It was given before both types of instruction occurred and afterwards. Results of the study showed that the use of technology to relay mathematics instruction had a significant positive affect on mathematics achievement when compared to conventional instruction (Al Khateeb, 2019).

Another notable increase is in the area of writing. A ten-year review of the literature investigated how using technology in teaching writing in K-12 settings impacted students' writing skills. The findings of the review concluded that such implementation enhanced students' composing skills, general writing skills, and knowledge of literacy (Williams & Beam, 2019). These increases in student achievement can be attributed to higher levels of engagement with instruction and higher levels of

knowledge retention (Rashid & Asghar, 2016). Compared to non-technology users, students who use technology in the classroom have higher overall grade point averages and perform better on standardized tests (Rashid & Asghar, 2016).

Specifically technology integration has shown increases in student achievement of early childhood students. In a study of thirty-six third grade students of varying abilities, an experimental group was allowed to use geometry software to learn about symmetry of two dimensional shapes while the control group was taught using traditional methods with paper and pencil. The experimental group using the software performed better than the control. These findings indicate that technology has the ability to improve students' academic achievement (Thangamani & Eu, 2019). Another study investigated the use of augmented reality apps to aid in fluency. Forty-two children from Kuwait were instructed on the English alphabet—one group using augmented reality apps and the other using traditional face-to-face methods. The group using the technology had higher academic achievement and scored higher on the English alphabet test (Safar et al., 2017).

Greater Student Motivation

Today's students are often referred to as digital natives (List, 2019; Shtepura, 2018). They are rampant consumers of technology, using it in almost all aspects of their personal lives. Because of this, utilizing technology in the classroom greatly improves student motivation. In one study, student motivation to complete tasks was elevated when technology was used for academic purposes (Hietajärvi et al., 2019). Also, students who experience daily technology use in the classroom have greater motivation levels in their classwork (Shtepura, 2018). Students have reported more excitement about completing

assignments when engaged with technology (Higgins & Bushell, 2018; Zainuddin & Perera, 2019). In order to investigate the motivation of dental undergraduate students, a study was conducted by Meguid and Collins (2017). Traditional classroom lectures were studied along with Audience Response Systems (ARS). The researchers used traditional lectures and would often insert audience response methods where the lecture became interactive, and students were given feedback about their answers. Focus groups and questionnaires were utilized to determine that 95% of the students studied preferred the more interactive lecture, and 81% stated it created a greater motivation to learn (Meguid & Collins, 2017).

The use of technology in the classroom has shown increases in motivation across subjects in early childhood classrooms as well. Miller (2018) conducted a study in a rural kindergarten class using iPads and interactive technology. Students were allowed to engage in a variety of mathematical apps while learning about number sense. Previously, the students had learned only from face to face instruction from the teacher. By using the interactive technology, students showed more motivation to complete number sense tasks than from traditional classroom methods. Student motivation to read has also shown to increase through the use of digital literacy. Ozturk and Ohi (2018) conducted a study of 105 six- and seven-years olds and their parents in two different primary schools. Through parent questionnaires and individual student interviews, the researchers concluded that student motivation to read or interact with text was significantly increased when allowed to interact with digital texts.

Improved Communication

Technology can transform communication in the classroom (Domingo & Gargante, 2016; McKnight et al., 2016). Now online assignment hubs, virtual classrooms, virtual labs, discussion boards, and other online platforms allow students to communicate. The level of positive social interaction between students in the classroom is increased due to technology integration. Many times, the technology encourages group work, collaboration, and discussion (Domingo & Gargante, 2016; McKnight et al., 2016). By using digital technologies, students learn how to take turns, share, and solve interpersonal conflict (Berson et al., 2019). Besides student interaction, technology can improve communication between teachers and students. Through the use of technology, teachers can provide ongoing and immediate feedback to their students on assignments and discussions (McKnight et al., 2016). This improved teacher-student communication can even been seen in early childhood classroom settings Gennari, Melonio, and Rizvi (2020) conducted a research study with three primary grade classrooms to discover if technology made an impact on communication between teachers and students. Based on their findings, they concluded that interactive communication using technology increased both teacher and student engagement in classroom conversations. Additionally, primary students learned conversation norms more rapidly than in regular classroom conversations.

Integration of Technology in Early Childhood Settings

Technology integration in early childhood settings has increased over the years. Since 1987, technology usage in early childhood classrooms has risen from 15% to about

90% (Janisse et al., 2018). A report from the National Center for Education Statistics

confirms that almost all public school teachers in the United States have computers

available for their use. Additionally, the computer to student ratio has risen from six to

one in the nineties to now three to one (Janisse et al., 2018). Likewise, internet

availability has increased from 35% in 1994 to almost 100% currently (Janisse et al.,

2018). This increase can be attributed to today's society where technology is present in

most aspects of day to day life (Ihmeideh & Al-Maadadi, 2018).

   While the influx of technology has increased in early childhood settings, the types

of technology being integrated have not (Dong, 2018). Oftentimes, technology is merely

integrated during center time, and students interact with computer programs to drill

certain skills (Ihmeideh & Al-Maadadi, 2018). Despite research that technology can

provide many cognitive, emotional, social, and psychosocial outcomes for younger

students, the majority of early childhood teachers use technology to implement software

that does not promote higher order thinking skills (Mamutovic & Vujovic, 2018). Early

childhood teachers simply do not employ enough strategies to actively engage their

students with the technology (Dong, 2018).

Barriers to Technology Integration

   Even though there has been an increase of technology integration in early

childhood settings, and there is research that purports that technology should be used in

more meaningful ways in order to reap all the benefits, there are many barriers to the

effective implementation of technology in early childhood settings. These are both

external and internal barriers. These barriers affect the types of technology activities integrated into early childhood classrooms.

External Barriers

External, or first-order barriers, are those that are not controlled by the teacher. Outside factors like administrative support and expectations, access to resources, and other influences beyond the teacher's control are considered external barriers. While there are many external barriers to early childhood educators' implementation, the main ones are lack of access, lack of training, and lack of administrative support (Arikan et al., 2017; Vongkulluksn et al., 2018).

Lack of Access

While more and more schools are implementing 1:1 classrooms, and each student has access to technology at their fingertips, many early childhood classrooms are still limited in the number of devices per classroom (Simard & Karsenti, 2016; Singhavi & Basargekar, 2019). Specifically, in early childhood, the ratio of technology devices to students is so low that teachers are limited on ways in which to integrate the technology in the classroom (Vongkulluksn et al., 2018). Furthermore, some schools take a lab approach to technology where computers and other technology devices are housed in a separate classroom. Due to scheduling conflicts, types and amounts of technology can be inhibited (Vongkulluksn et al., 2018). Even when teachers have increased availability of technology, many cite a lack of technology support for the hardware devices, so they inevitably do not use the technology when malfunctions occur (Lan et al., 2015).

Lack of Training

Additionally, teachers are often simply not afforded the professional development opportunities needed to adequately and effectively implement technology in early childhood settings (Riojas-Cortez et al., 2019; Vongkulluksn et al., 2018). Lan, Worch, and Aguiton (2015) noted that while most teachers felt that their college preparation was adequate to prepare them for technology integration, the changing dynamics of technology demand that ongoing professional development with opportunities for engagement was needed.

Arikan, Fernie, and Kantor (2017) conducted a research study on technology professional development of HeadStart teachers. Through the Teachers Learning Technology (TLT) project, two HeadStart agencies were supported using a "communities of learners" (p. 1835) approach whereby eight participants, non-traditional early childhood teachers who were pursuing their educational degrees, were immersed in authentic educational technology activities that relied on social interaction. Prior to the study, the early childhood teachers expressed feelings of anxiety about having to learn something new and a general fear of using technology in the classroom. This particular project lasted three years, and these teachers were engaged in experienced-based, contextualized, and collaborative learning that focused on integrating technology in early childhood settings. By conducting interviews, observations, and collecting artifacts, Arkian, Fernie, and Kantor (2017) discovered that when teachers were provided with such professional development, it could affect their technology practices in the

classroom. Attitudes and perspectives about technology in the classroom were changed, and apprehensive teachers became more eager to try new technological approaches.

Lack of Administrative Support

Even when teachers have access to resources and training, oftentimes, schools do not have a unified vision for technology integration in the classroom (Choi & Yi, 2016; Vongkulluksn et al., 2018). Administrative support is necessary to ensure that teachers are employing technology in the classroom in a meaningful manner, but studies show that this is often not the case. In fact, Nikolopoulou and Gialamas (2015) examined the perspectives of 134 kindergarten teachers using a questionnaire with a Likert scale ranging from 1 (not a barrier) to 4 (major barrier). One section focused strictly on the barriers to integration, and for lack of administrative support, the mean score was 3.25, indicating that teachers felt this was a huge barrier. Their research indicated that kindergarten teachers would be less inhibited about using technology in the classroom if they felt they had the necessary support from the administrative staff.

Internal Barriers

Internal barriers, or second-order barriers, are those that are intrinsic to only the teachers. These include knowledge and skills about integration, including hardware and software, and they also include attitudes and beliefs (Clements & Sarama, 2016). Among these internal barriers, teachers' beliefs regarding technology "have been been recognized as the most proximal determinant of technology integration" (Vongkulluksn et al., 2018, p. 71).

Teachers' Perspectives Regarding Technology Integration

Teachers' beliefs about how well technology can help fulfill their instructional objectives weigh heavily on how they implement technology in the classroom. In fact, a research study concluded that teachers with more teaching experience reported more negative beliefs regarding how effective technology was in their instruction than newer teachers with less experience (Vongkulluksn et al., 2018). Their attitudes about technology in general affect how often and what kinds of technology they choose to employ in the classroom (Clements & Sarama, 2016). Specifically, teachers' who align themselves with a constructivist teaching approach tend to implement technology in their classrooms more often (Alt, 2018; Farjon, Smits, & Voogt, 2019).

For many early childhood educators, attitudes about technology are affected by the principles of a play-based curriculum. As such, the integration of technology does not fit into a play-based pedagogy. Many of these educators value curriculum that encourages learning through play, and their attitudes and beliefs about technology in the classroom are in direct opposition to this ideal (Edwards, 2016). A study conducted by Aldhafeeri, Palaiologoub, and Folorunsho (2016) investigated 195 early childhood teachers whose teaching practices centered on a play-based pedagogy. Seventy- seven percent of the teachers surveyed felt that digital devices were not developmentally appropriate and had no place in such a curriculum, 57% of the teachers said they would not even attempt to use them in their classrooms, and 65% of the teachers said that digital devices could not support learning in any way. This study suggests that teachers do not have the knowledge base to draw upon to actually amalgamate technology in these type of classrooms,

especially since technology play actually promotes creativity and curiosity, encourages student exploration, and enhances collaboration and problem solving (Magen-Nagar et al., 2019; Miller, 2018).

An additional perception that affects the technology integration in early childhood classrooms is the perceived usefulness of technology to fulfill instructional objectives. According to Lan et al., (2015), many educators believe the advantages of using technology in the classroom are outweighed by the disadvantages because of "the possible distractions that technology would bring to the students" (p. 6). In a multiple case study of conducted by Constantine, Różowa, Szostkowski, Ellis, and Roehrig (2017), elementary school teachers' beliefs about technology were investigated. Even when teachers were ambitious and planned to utilize technology in STEM activities, they stated that they often became reluctant and did not integrate it as much as they planned because they felt that the technology might hinder the learning process.

Another perspective that affects the implementation of technology in early childhood classrooms is teachers' perceived skill levels of their students. In an inquiry by Mourlam, Strouse, Newland, and Lin (2019), 43 preschool students and 180 teachers were studied and the teachers' beliefs about their students' digital technologies and media skills were compared to their actual observed skill levels. The findings of this study found that preschool students could accurately engage themselves in the technology nine times out of twelve without assistance. The teachers surveyed mismatched levels of technology skill for their students on over half of the technology tasks. This suggests that teachers' perspectives about skill level are being influenced by outside factors.

Finally, many teachers may be discouraged by the amount of self-education that technology requires of their students. Allowing students to navigate technology and create most of the knowledge and products themselves may conflict with personal pedagogical beliefs. Integrating the technology into existing teaching styles is problematic which leads to less and less usage by teachers (Hartman et al., 2019; Nicol et al., 2018).

Teacher Decision Making With Technology

Teachers are constantly asked to make decisions about their teaching practices. Choosing what technology to integrate in the classroom also involves a great deal of decision making. There are many factors that teachers must consider when choosing the appropriate technology to use in their classrooms, and great care and discernment must be used when selecting what to integrate (Jeong & Kim, 2017; Tondeur et al., 2016).

Howard and Gigliotti (2016) examined how risk factors into teacher decision making with technology. An Australian teacher's experience with using technology in a 1:1 classroom environment was studied over three years. The teacher was chosen because she reported that she had positive feelings about using technology in the classroom. She also reported that her teaching had changed throughout the years because she had been involved in risk-taking. Semi-structured interviews and questionnaires were used throughout the study. The results of the study concluded that experimentation is necessary to gain confidence in technology integration, and risk-taking is related to this level of confidence.

Teacher collaboration is also a factor for teacher decision making with technology. Boschman, McKenney, and Voogt (2015) designed a single holistic case study that researched a team of six kindergarten teachers. Teachers engaged in a workshop to have design talks while using PictoPal, a digital early literacy environment. The kindergarten teachers were to make decisions about activities to complete both on and off the computer using PictoPal. Participants were videoed during their design talks, and transcripts were created and later coded. Through the coding, the researchers discovered that making technology related decisions seemed to follow a pattern. The teachers shared their knowledge about what they knew about the activity being discussed and the technology needed to complete the activity. Teachers continued to share until one or more teachers expressed concerns or evaluations. This was always followed by an action to strike the activity. The researchers concluded that collaboration had an effect on technology integration, and this collaboration was often the result of a lack of knowledge about the technology being integrated.

Uluyol and Sahin (2016) conducted research in 24 public elementary schools in Turkey. The study investigated the types of technology used by teachers in the classroom as well as the decision-making process involved in choosing these activities. One hundred teachers whose teaching experience ranged from seven to 23 years were studied. Interviews were conducted and recorded; they were later transcribed and coded. The main conclusion regarding decisions with technology revolved around incentives. Teachers decided to use technology in the classroom if there was some incentive. The greatest incentive category was their own expectations. For many, the incentive is that it

saved time and made their job easier. Another incentive cited was student motivation. The second greatest incentive category was colleagues. Teachers decided to use technology if suggested by another teacher or they became inspired by one.

Smith, Parker, McKinney, and Grigg (2017) utilized a comparative case study approach to investigate the technology related decision making processes that fourth-grade teachers used when teaching the same content. Multiple sources of data—observations, lesson plans, and interviews-- were analyzed from 27 teachers in six schools. This data analysis revealed three themes that affect teacher decision making with technology. They were beliefs about perceived student ability, teacher pedagogical design capacity, and time. This study concluded that teachers only use the technology in the content area when they feel their students have the proper capability to use it. The teacher's pedagogical design capacity affected decision making because teachers only used the technology when they felt they understood it well enough to use it themselves, and time was a factor because utilizing the technology might become a tradeoff for actually teaching the content (Smith et al., 2017).

Another study examined how teachers decide what software to implement in their classrooms. Thirty-four teachers were studied while using the software programs Geometer's Sketchpad and Fathom. Teachers were observed while implementing the programs and later interviewed about their usage. The themes that emerged from the data analysis were perceived ease of use and understanding of the software's capability. Teachers' decision making was influenced by their own comfort (Okumus et al., 2016).

TPACK Model for Technology Integration

Because there are many factors that influence a teacher's decision to use technology in the classroom, the Technological Pedagogical Content Knowledge (TPACK) model was created to help educators understand how and why technology should be integrated in the classroom. This framework guides educators in choosing the proper technology as it relates to the content knowledge, pedagogy, and student learning (Wang, 2019; Yildiz, 2019; Young et al., 2018).

The TPACK framework has three domains. They are: Technological Knowledge, Pedagogical Knowledge, and Content Knowledge. A combination of these three domains forms the TPACK which enables teachers to choose the most effective technology and pedagogy to deliver the content (Elas et al., 2019).

Having knowledge in each of these domains does not guarantee that teachers will implement meaningful technology in their classrooms. Roussinos and Jimoyiannis (2019) researched 399 Greek early childhood teachers in regards to their own TPACK knowledge. Participants completed an anonymous survey, and results revealed that while the teachers rated themselves high in each of the separate domains, they could only perceive them separately. This made integrating the domains difficult, and—thus—integrating technology in meaningful ways became increasingly problematic as well.

Summary and Conclusions

Over the years, many themes have emerged from the research on literature involving technology use in the classroom. The most notable themes are benefits of technology in the classroom, barriers to integration, and the themes related to teacher

decision making when using technology. Such themes included perceived student ability, teacher pedagogical knowledge, and time.

One theme is the benefits of technology in the classroom. Technology can increase student achievement (Al Khateeb, 2019; Dunn & Kennedy, 2019; Huang & Lin, 2017; Ige & Hlalele, 2017; Lin, 2019; Rashid & Asghar, 2016; Safar et al., 2017; Thangamani & Eu, 2019; Williams & Beam, 2019; Xiong, 2018), motivation (Hietajärvi et al., 2019; Higgins & Bushell, 2018; Meguid & Collins, 2017; Miller, 2018; Ozturk & Ohi, 2018; Shtepura, 2018; Zainuddin & Perera, 2019), and communication skills (Domingo & Gargante, 2016; Gennari et al., 2020; McKnight et al., 2016). While there are many advantages to allowing students to engage with technology in meaningful ways, it is unknown why early childhood educators typically choose technology activities that simply involve using technology for presentation of material or interaction with a computer program or app that does not focus on higher order thinking skills (Smith et al., 2016). The use of technology in these manners is not utilizing the technology to its fullest potential, and—thus—these benefits cannot be realized.

Another theme is the barriers to technology integration. The barriers are known and include both internal and external factors that prevent early childhood teachers from integrating technology in their classrooms. These include lack of access, lack of training, lack of administrative support, and teacher's perspectives about technology integration in the classroom (Arikan et al., 2017; Vongkulluksn et al., 2018).

There are several major themes that pertain to teacher decision making with technology. Beliefs about perceived student ability is one theme that affects how often

and what kinds of technology teachers may incorporation (Smith et al., 2017). Another

theme is teacher pedagogical capacity. Teachers design technological instructional

activities when they are more aware of the technology being used and find it comfortable

to use the technology (Smith et al., 2017). Time is yet another theme. How often and

what kinds of technology are incorporated are often dependent upon the time it takes to

implement the technology (Smith et al., 2017).

There is much that is known about technology integration in early childhood

classrooms. Besides the barriers previously noted, there is quite a bit of research about

the significance of teacher utilization of technology. What is not known is all the varying

ways early childhood educators could integrate technology in the classroom to provide

more meaningful experiences.

Also known are the many different perspectives of technology that early

childhood educators possess. What is not known is how these perspectives affect the

ways they integrate technology in their classrooms. Also, it is known that risk-taking,

experimentation, incentives, and collaboration with colleagues affect the decision-making

process of educators when they choose the technology activities to integrate in the

classroom (Howard & Gigliotti, 2016).

While there is much research on the perceived benefits and barriers of technology

in the classroom, there is a gap in literature pertaining to the implementation of

technology in early childhood classrooms. There are inconsistencies in literature

pertaining to how often and why early childhood educators integrate technology in the

classroom. Additionally, there is a lack of literature pertaining to what influences technology incorporation by early childhood educators.

There are recent studies addressing the use of technology in early childhood classrooms, but they do not address the reasoning behind implementation. This study addresses the gap by examining a small group of early childhood educators to see how and why they choose technology activities to integrate into their instruction. This will add to the discussion on quantity of technology used in early childhood settings by adding a quality component when choosing technology activities.

To address this gap in literature, I will employ a qualitative research design. A single descriptive case study approach will be used to discover how environmental and social factors affect technology integration in early childhood classrooms. Chapter Three will provide a detailed account of the research design as well as the researcher's role. Additionally, participant selection and instrumentation will be examined along with the data collection and analysis procedures. Finally, trustworthiness and ethical issues will be explored.

Chapter 3: Research Method

The purpose of this study was to explore how and why early childhood teachers chose technology activities to integrate into their instruction. It addresses the types of activities early childhood teachers use in their classrooms and what might influence their choices. This chapter contains a description of the research design and the rationale used in this study, specific role of the researcher, methodology used, population and sample, instruments, data collection and analysis, and a discussion of trustworthiness and ethics as they relate to this study.

Research Design and Rationale

In my research study, I explored how and why early childhood teachers chose technology activities to integrate into their instruction. The following question addresses the purpose of my study:

1. RQ1-Qualitative: What influences the decisions early childhood educators make when choosing the types of technology activities to integrate in the classroom?

This question was best answered by employing a qualitative research design. Qualitative research is naturally objective and allows the phenomenon being studied to be explored in its natural environment (Ravitch & Carl, 2016). Quantitative research methods were rejected because they focus on the collection of data to explain relationships and differences (Saunders et al., 2015), and I did not plan to quantify any data or explore relationships between variables. I conducted my research in a single school. Observing teachers in their own context and interacting in face-to-face situations was very important while studying choices and influence; thus, a qualitative research

design was necessary (see Creswell & Creswell, 2017). Likewise, multiple perspectives were gleaned in order to create a bigger overall picture of the phenomenon being studied—yet another characteristic of qualitative research (see Creswell & Creswell, 2017).

There are several types of qualitative research. Ethnography is a study of a culture or social group (Saunders et al., 2015), but I was not planning to focus on one particular culture or social group, and there were no anticipated cultural differences within this study. Grounded theory seeks to uncover a theory from data and typically uses a large amount of participants (Ravitch & Carl, 2016). Theory creation was not the goal of this study, and a small number of participants were being explored; therefore, grounded theory was not applicable to this research. Phenomenology was considered, but this method of qualitative research uses long, in-depth interviews to understand the subjective, lived experiences of participants. It is based on the idea that one single experience can be interpreted differently by different people (Ravitch & Carl, 2017). Because I was not seeking to describe a single experience, this method was eliminated.

A case study also examines phenomenon, but the phenomenon is investigated in real-life settings with multiple sources of evidence (Yin, 2017). Because my research question addressed the social phenomenon of teacher choices and influences, a case study was the best qualitative approach (see Yin, 2017). A descriptive case study was used to research the phenomenon. A descriptive case design explores participants' world view based on their experiences (Yin, 2017). It is also intentional and focuses on the phenomenon while providing anecdotal records (Hesse-Biber, 2016; Padilla-Diaz, 2015).

While there is research that indicates that both internal and external influences have an

impact on the amount of technology used in early childhood settings (Edwards, 2016;

Mustola et al., 2018; Quesenberry et al., 2016), there was little literature to explain how

these same influences have affected the types of technology activities chosen by early

childhood educators. A descriptive study design allowed an in-depth view of a small

group of people, thus presenting a rich depiction of how and why early childhood

teachers chose to integrate technology in their classrooms (see Yin, 2017).

Role of the Researcher

Because I was conducting a qualitative descriptive case study, my role in the

research was a very specific one. I became a data collection instrument. I took on an emic

role. That is, I was an insider who fully participated in the study and took an interpretivist

approach (see Hancock & Algozzine, 2016). Moreover, I was not an outsider because I

was conducting a research study within my own school; therefore, I had already formed

relationships with many of the participants although they were just peer-to-peer

relationships—not supervisory.

According to Creswell and Creswell (2017), biases and assumptions can affect

how data are collected, analyzed, and interpreted, and while these biases and assumptions

can cause negative outcomes for the research, they also have the power to raise the

researcher's awareness and gain greater insight as the research is conducted. Admittedly,

I did have personal bias.

As an educator with over 20 years of experience in early childhood settings, and a

Master's degree in Curriculum and Instruction with an emphasis on Educational

Technology, I had developed a personal view of how I thought technology should be embedded in early childhood classrooms. Also, because I was conducting research in my own school setting, I was aware that I had forged professional relationships with all those being studied. I did not have any supervisory power over any of the individuals being studied, but this could have caused some bias in research. There was also an ethical issue because I was conducting research within my own work place. This means I had to take an insider approach to research where I was the researcher and also a professional in the research community being studied. This could have interfered with my ability to be neutral. The Institutional Review Board (IRB) was contacted for review, and I was approved to research within my own school setting.

While conducting my research, I had to combat these issues by becoming more aware of myself. One way I did this was keeping a journal throughout my study. Corbin and Strauss (2015) explained that it is beneficial to start a journal at the beginning of the research in order to reflect upon how biases and assumptions may impact the study. I journaled throughout my research, noting my reactions during data collection so that I could become conscious of the influences the participants and I had on each other— especially because we were known to each other prior to the start of the study. Keeping this journal enabled me to be a reflexive researcher (see Corbin & Strauss, 2015), and reflexivity was vital when conducting qualitative research in order to ensure trustworthiness (see Creswell & Creswell, 2017).

Another way I addressed these issues was to have participants review my interpretations. Because I had professional relationships and these participants were from

my own school, I might have included my own opinions in my analysis of the interviews and questionnaire data. By allowing the participants to review my conclusions to see if they were representative of their thoughts and beliefs, I ensured that I was not including my personal views in the data collection (see Ravitch & Carl, 2016).

Methodology

Participant Selection

After obtaining approval from the IRB, I obtained permission from the Southern Peach School district as well as the principal of Southern Peach Elementary School. Then, participants were selected. The participants for this study were eight early childhood educators from Southern Peach Elementary School, two each from grades Pre-K through second grade. Specifically, participants were selected using a purposeful sampling technique. According to Patton (2015), purposeful sampling is appropriate when conducting an in-depth study for information-rich cases. This case study proved to be information-rich as I sought to provide an explanation about a subject for which little was known.

The specific type of purposeful sampling used was criterion: eight participants were selected based on a set of criteria (see Patton, 2015); therefore, participants were selected according to the following criteria: (a) Participants must have taught for at least 3 full years before the beginning of the study, and (b) participants must already be integrating technology in their classrooms.

All teachers in grades Pre-K through second grade at Southern Peach Elementary School were invited to participate through an email explaining the study (Appendix A). A

consent form was attached. The first two teachers in each of the grades being studied and who met the criteria and returned a signed consent form were chosen for the study.

Instrumentation

For this study, I collected data through questionnaires and recorded interviews. Both of these instruments were researcher-designed. They were based upon background literature and aligned with the research question.

A questionnaire (Appendix B) was first given to participants. This questionnaire was one I developed based off of the literature review and aligned with the research question. A qualitative questionnaire was appropriate for this study because deep insights could be gained. By providing participants with a questionnaire, they could take more time to collect their thoughts and develop their answers (see Charlotte & Hagström, 2017). According to Joo et al. (2018), early childhood educators are integrating technology into their classrooms, but there is little research about what types of technology activities they are integrating; therefore, the questionnaire asked questions regarding the activities that early childhood educators were using in their classrooms. Bandura (1997) discussed how both internal and external factors influenced decision making, and it has been noted that these factors influence how often early childhood educators integrate technology in the classroom (Edwards, 2016), but there was little research to see if these factors contributed to the types of technology integrated. Because of this, there were questions regarding both internal and external factors as they pertained to technology integration. This gave a better insight into how and why early childhood teachers chose technology activities to integrate into their instruction.

For this study, I used an interview protocol I designed (Appendix C). This interview protocol was semistructured and aligned to my research question. This protocol was chosen to elicit meaningful data that pertained directly to the study (see Castillo-Montoya, 2016). The interview questions further addressed the factors that influenced technology integration (see Edwards, 2016), and they focused more on teacher perspectives. Bandura (1997) observed that a person's perspectives could influence their actions. Similarly, Clements and Sarama (2016) noted that teachers' perspectives could influence the amount and types of technology they choose to integrate in the classrooms.

Both the questionnaire and interview questions demonstrated content validity. They were closely related to the conceptual lens of the study and related literature, including the gaps in research. They were also closely aligned with the research question (see Ravitch & Carl, 2016). These factors further ensured that there were sufficient data to answer the research question.

Procedures for Recruitment, Participation, and Data Collection

In order to conduct this case study, I followed specific procedures for recruitment, participation, and data collection. The procedures I followed are explained in the following subsections.

Recruitment and Informed Consent

To begin my recruitment process, I had to first gain IRB approval and then approval from the Southern Peach School District. Then, I contacted the principal of Southern Peach Elementary School to explain the purpose of my study. I asked that the principal provide me with a signed letter of cooperation stating the willingness of

Southern Peach Elementary School to be my research partner. Upon obtaining the

permission of the principal, I emailed all teachers in grades PreK through second grade

describing the study (Appendix A). An informed consent form was attached to the email

further explaining the details of the study. Teachers were asked to print, sign, and return

the informed consent form if they agreed to the study.

Participation

For this case study, I chose the first two teachers in grades pre-K through second

grade who met the criteria and returned the signed consent forms. To avoid classroom

disruptions, I emailed these teachers upon selection to participate in the study. Also, I

used email to set up interview times and provide the interview's location.

Data Collection

I collected data from multiple sources. The first source was questionnaires. The

questionnaire (Appendix B) was sent through Google Forms so that participants could

answer electronically, at their own convenience, and in the setting of their choice.

Individual interviews with the selected participants were also conducted. Room selection

for the interview was at the discretion of the principal. Each participant took part in one

interview lasting approximately 45 minutes. An interview protocol (Appendix C) was

created to conduct the interviews. At the beginning of the interview, I provided the

participants with a copy of the interview questions and gave them some time to compose

their thoughts for their answers. The interviews were digitally recorded with a device that

had been previously tested.

Another source of data used in this study was field notes taken during the interviews. While I was recording the interviews, at times there was additional information that I needed to remember that might not be noticeable during the recordings. Field notes taken during interviews were useful in reminding me of this information (see Ravitch & Carl, 2016).

Upon the completion of interviews, I debriefed the participants. This allowed the participants to ask me any questions they wished about the study and express any concerns they may have had. I told the participants that I would notify them within a week if a follow-up interview was needed or if any clarifications were needed for any information.

Data Analysis and Results

The questionnaire consisted of six open-ended questions all related to the research question. Each question from the questionnaire was analyzed using a coding cycle that employed first and second cycle coding. At the first cycle, I primarily employed elemental methods. Saldaña (2015) suggests using descriptive, process, and initial coding to address research questions that address perspectives of participants. By choosing these types of coding, I could ensure that the data analysis was aligned with the research question. After the first cycle coding was completed, second cycle pattern coding was utilized (see Saldaña, 2015) to see if relationships existed between the first cycle codes. These codes were recorded in Google Sheets, so that themes could be easily recognized, and while I did not plan to delete discrepant cases because they could possibly motivate rethinking codes and/or themes, there were none (Saldaña, 2015).

Interviews were digitally recorded and then transcribed in Google Docs. Then, like the questionnaires, they were coded using first and second cycle coding, using elemental methods (see Saldaña, 2015) to address Research Question 1. Themes were developed from the transcriptions for the research question. As with the questionnaires, discrepant cases were not to be ignored in order to rethink themes if necessary (Saldaña, 2015); however there were no discrepant cases.

After reviewing the transcripts of the interviews and engaging in the coding cycles, I reviewed my field notes taken during the interview process. I cross-referenced the field notes with the interview transcripts to validate the date from the interviews and the themes that had emerged from the coding cycles (see Saldaña, 2015) to validate the data from the interviews and gain a deeper understanding of technology integration.

Trustworthiness

Qualitative research should be credible, transferable, dependable, and confirmable. There are different ways to achieve trustworthiness. They include triangulation, audit trials, peer debriefing, and prolonged engagement (Ravitch & Carl, 2016). For my study, I triangulated data using multiple sources of data: questionnaires, interviews, and field notes. Also, I conducted member checks from participants in the study.

Credibility

Credibility is a critical aspect pertaining to the trustworthiness of qualitative research. Essentially, credibility refers to the truthfulness of the data and the interpretations of the researcher (Ravitch & Carl, 2016). In order to establish credibility,

triangulation was used. Triangulation involves obtaining and analyzing multiple sources of data (Ravitch & Carl, 2016). By analyzing the questionnaires, interviews, and field notes from interviews, I could triangulate the data and provide rich descriptions of the data. Additionally, member checks were utilized to aid in credibility. Member checks involve having participants review the findings and interpretations of the researcher and allowing them to verify the accuracy of the conclusions (Creswell & Poth, 2017). To conduct my own member checks, I provided participants with the findings of my study and allowed them to determine if their thoughts and experiences were accurately identified.

Transferability

A research study's transferability is based on how well it can be applied to other settings or groups (Ravitch & Carl, 2016). To ensure transferability, the researcher must provide rich descriptions (Creswell & Poth, 2017). For my study, I conveyed detailed descriptions about the participants, contexts, and procedures so that another researcher would be able to use my findings to conduct more research. These in-depth descriptions will allow researchers to compare my study to others and find similarities in the research questions, populations, and setting (Ravitch & Carl, 2016).

Dependability

When a study is dependable, the results of the study would be stable over time (Ravitch & Carl, 2016). For this study, I used multiple data sources to triangulate data. Triangulation is a way to ensure dependability (Creswell & Poth, 2017). Another way to achieve dependability is through a code-recode strategy (Saldaña, 2015). By using both

first and second cycle coding, I could increase the dependability of my study. Limiting

bias is another way to confirm dependability, and I used reflexivity to assure this (see

Ravitch & Carl, 2016). I kept a reflexive journal throughout the study where I made my

own notes about my feelings during the study. This was necessary since I was

researching in my own work environment.

Confirmability

Confirmability is simply the objectiveness of the research (Merriam & Tisdell,

2016). Confirmability was established by keeping a reflexive journal (see Ravitch & Carl,

2016). As discussed earlier, by keeping a reflexive journal, I could make note of my own

personal experiences throughout the study and read and reread it to make sure that I was

not letting my own beliefs and experiences impact the research.

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Ethical Procedures

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Because my study involved human participants, ethical procedures had to be

taken into consideration. Furthermore, ethics was addressed throughout the study—from

the creation of the study down to the interpretation of the results (see Dooly et al., 2017).

There were many steps I took to ensure my study was ethical.

The first step I took was to obtain approval to conduct this study from the IRB at

Walden University. I received IRB approval on June 26, 2020, approval number 06-26-

20-0351429. Before beginning my study, I obtained informed consent from all

participants. As noted in the informed consent, I used codes instead of names. This

established a sense of confidentiality.

When I conducted interviews, I made sure that I was conducting the interviews at times that were convenient for the participants. Also, after digitally recording the interviews, I made sure they were password protected on my computer—another assurance of confidentiality. Then, after my dissertation is approved, I plan to keep all the data for five years as mandated by Walden University.

Summary

In summation, my research design was a descriptive single case study. The choice for this type of qualitative study aligned with both the research question and conceptual framework of the study. Additionally, my role was that of a data collector. In terms of methodology, I conducted interviews and collected data from classroom observations and lesson plan analysis from a purposeful sample of early childhood educators at one school. The data was analyzed with both first and second cycle coding. All of these components were in alignment with the purpose and research question of the study.

Chapter 4 will include the results of this study. Additionally, it will describe the setting of the study. Data collection and data analysis strategies will also be discussed.

Chapter 4: Results

The purpose of this study was to explore how and why early childhood teachers chose technology activities to integrate into their instruction because technology was not always being implemented in meaningful ways. The objective was to address the types of activities early childhood teachers used in their classrooms as well as explore what might influence their choices. In Chapter 4, I discuss the findings of the study after reviewing the data collection and analysis procedures.

My data analysis was guided by the following research question:

1. RQ1-Qualitative: What influences the decisions early childhood educators make when choosing the types of technology activities to integrate in the classroom?

Setting

Eight participants were selected from the Southern Peach School District. Two early childhood educators from each of the grades Pre-K through second grade were chosen to complete questionnaires and interviews. Participants responded with interest to participate in this study by replying to an email explaining the study. An informed consent was attached to the email that participants completed online. Follow-up emails were sent to participants who were selected, and interviews were scheduled. Then, questionnaires were emailed to the eight participants. While initially interviews were planned to take place in rooms of the principal's choosing at the elementary school, due to COVID-19 school shut-downs, interviews were held online using Google Meets, and the interviews were recorded. Once all the interviews were conducted, I provided

participants with the findings of my study and allowed them to determine if their thoughts

and experiences were accurately identified.

Demographics

Eight individuals participated in this study. In order to ensure confidentiality, all

participants were assigned a participant number. Demographic information is displayed

in Table 1.

Table 1

Participant Demographics

Participant number	Current grade level	Years taught
P1	PreK	3
P2	PreK	32
P3	Kindergarten	8
P4	Kindergarten	4
P5	1st	17
P6	1st	11
P7	2nd	21
P8	2nd	13

As Table 1 shows, participants had varying years of teaching experience. Three

participants had less than 10 years of teaching experience, five participants had over 10

years of teaching experience, with one participant having over 30 years in the teaching

profession.

Data Collection

Data were collected through questionnaires and interviews. Participants were sent

a link to a questionnaire (Appendix B) through Google Forms. Questions were open-

ended, and participants could give as little or as much detail as they desired. After

completing a questionnaire, participants took part in interviews through the Google Meets

platform. As previously stated, interviews were originally supposed to be face-to-face

interviews that were to be conducted in rooms of the principal's choosing at the school;

however, due to the COVID-19 pandemic and school closures, interviews were

conducted virtually. Interviews were conducted at times convenient to the participants

and lasted no longer than 45 minutes. During the interviews, an interview protocol was

used that encouraged open-ended responses that allowed participants to share their

thoughts, feelings, and experiences with the research topic. After interviews were

completed, the recorded Google Meet mp4 files were converted to audio files, and

Google's Speech-to-Text extension was used to transcribe the audio. Interviews took

place from July 24, 2020 to July 31, 2020. Two days prior to each interview, I sent a copy

of the interview questions (Appendix C) to the participants.

I began each interview by asking the participant for their consent to record the

Google Meet interview. After their agreement, I started the recording and tried to build a

rapport with the participants. Then, I provided an explanation of the study and thanked

the participants for their time and being available to meet virtually due to the COVID-19

pandemic. The participants were then asked the questions from the researcher-designed

interview protocol (see Appendix C). At the conclusion of each interview, I thanked each

participant for their time and explained that I would email the findings of my study and allow them to determine if their thoughts and experiences were accurately identified.

After each interview was completed, I used Zamzar online file conversion to convert the Google Meets video file to an audio file. Then, I used the Google Speech-to-Text extension to transcribe the interviews and saved them to my password protected computer. Each interview took approximately 45 minutes. The only variations in the data collection process from the plan presented in Chapter 3 were that the interviews were not conducted in classrooms at the school. Instead, because of the COVID-19 pandemic, they were conducted virtually using Google Meets. Also, I had planned to give the participants a copy of the questions at the beginning of the interview, but due to the change in interview setting, a hard copy was not given, and participants were emailed the interview questions prior to their scheduled time. There were no unusual circumstances encountered in the data collection process.

Data Analysis

Coding Process

Saldaña (2015) indicated that using descriptive, process, and initial coding to address research questions that describe the perspectives of participants was necessary to properly analyze the data from a research study. For this study, the data came from two sources—questionnaires and teachers' interviews. Additionally, field notes I took during interviews were analyzed to triangulate the data. After I collected the data, they had to be analyzed in order to gain an understanding of why early childhood teachers chose technology activities to integrate into their instruction.

Analysis of Questionnaires

Participants in the study were each given a questionnaire with six open-ended questions all related to the research question (Appendix B). After all participants completed the questionnaires, I began a coding cycle that used first and second cycle coding, primarily focusing on elemental methods. This means that I approached the coding by focusing on basic filters. I focused on concepts, phrases, and descriptions— often using the words of the participants (see Saldaña, 2015). This coding style was chosen to make sure that the data were aligned with the research question, and as I began my coding, I reviewed the research question and purpose to make sure that I could relate the codes to the intended study.

I began my first cycle coding by printing the questionnaire data and highlighting phrases in the answers of each question for each participant. These highlighted data were then coded to categorize the data. While specific software created for data analysis can be used, I chose a more manual method that was assisted by computer. When completing my coding, I created a spreadsheet in Google Sheets to log my codes.

For this first cycle, coding of the questionnaires focused on elemental coding. The specific style I focused on was in vivo coding. Saldaña (2015) suggested using in vivo during a first read of the data because this coding focuses on the participants' actual words and creates a good summary of the data being studied. As Saldaña suggested, I then took those codes and created grouped coding categories based on common elements.

After the in vivo coding was complete, I began second cycle pattern coding for each question of the questionnaire. Saldaña (2015) suggested this to see if relationships

existed between the first cycle codes. The codes from second cycle coding were recorded

in Google Sheets, and I was able to determine themes. As noted earlier, there was a plan

to not delete discrepant cases because they could possibly motivate rethinking codes

and/or themes (see Saldaña, 2015), but there were no discrepant cases. The codes that

emerged from the questionnaires were:

- limited student technology use

- displaying material

- ease of use

- computer lab schedule

- distance learning

- professional development

- daily smartboard usage

- computer programs

- time needed

- Google classroom

- lack of training

- self-efficacy

Analysis of Interviews

To analyze the interviews, I took the same approach of first and second cycle

coding. As I did with the questionnaires, I began with first cycle coding, focusing on in

vivo coding. Again, this allowed me to focus on the actual words of the participants so

that I could get a good summary of the data. Then I used descriptive coding to break

down the data into parts and more closely examine them (see Saldaña, 2015). After this, I

engaged in second cycle coding to categorize the data into smaller themes. The codes that

emerged were:

- developmental appropriateness

- daily smartboard use

- document camera usage

- technology to present lessons

- distance learning

- activities that require little planning

- student achievement

- administrative support

- self-efficacy

- higher order thinking

- excess screen time

- over stimulation

- encourages creativity

- fine motor skills

- time management

- activities that do not require advanced knowledge/skills

- technology cannot replace the teacher

- computer programs

- displaying information

- Google applications

- student engagement

- student motivation

- lack of professional development

- instructional support

- little preparation

- digital play

- students easily distracted

- little knowledge about proper integration

- passive learning

- preparation for the future

- collaboration

- teacher directed activities

Results

The purpose of this qualitative study was to explore how and why early childhood teachers choose technology activities to integrate into their instruction. The data were collected and analyzed to answer the following research question:

1. RQ1-Qualitative: What influences the decisions early childhood educators make when choosing the types of technology activities to integrate in the classroom?

There were eight participants in the study. They consisted of two teachers from each grade PreK-2nd grade. Each participant took part in a questionnaire and an individual interview. Each of the interviews took 45 minutes or less and was recorded. Based on the

data analysis from interviews and questionnaires, codes and themes emerged. I was then able to take these codes and group theme into related categories or themes (see Saldaña, 2015). They are as follows:

- teacher perceptions of technology integration

- teacher self-efficacy

- external barriers to technology integration

- benefits of technology integration

- technology as a means to present lessons

- distance learning challenges

Theme 1: Teacher Perceptions of Technology Integration

This theme was about the perceptions participants had formed about technology integration in early childhood classrooms. This theme was mentioned by participants in both data sources: questionnaires and interviews. The perceptions of the participants were varied; yet, all eight participants felt there was value in using technology in early childhood classrooms since technology is rampantly used in everyday life. P3 stated, "We have to use technology with these kids in school because they are using it everywhere else". Every participant mentioned how their students have access to some device whether it is a parent's cell phone, a laptop, or a tablet.

Another common perception from teachers was that there were benefits to using technology in the classroom. Each one stated that their students' favorite center rotation was the computer center. Seven of the eight participants said their students only used the four classroom computers for the completion of the computer programs LexiaCore5 and

iLearn which are subscriptions that the system pays for and which data is used for during Response to Intervention. P7 indicated that she also used the classroom computers for the computer programs, and additionally, she allowed students to type their spelling words and listen to leveled readers through the online reading curriculum *Wonders* website.

All eight participants mentioned the idea that technology cannot replace teachers. Each participant brought up their experience with distance learning since the COVID-19 pandemic began, and their school closed on March 13, 2020. They discussed their frustration in trying to put lessons in Google Classroom (which will also be discussed in Theme 6), and how the personal element was gone from teaching during these months. P6 stated, "I recorded myself reading books aloud, but it wasn't the same. They couldn't interact with me the way they could have if they were sitting right in front of me." Six of the eight participants mentioned that even having live, asynchronous meetings with their children was futile. These participants felt the students were not engaged with the teacher like they would be in face-to-face teaching. All teachers mentioned presenting information to students during distance learning. P4 mentioned that sharing slideshows with students was not the same as teaching especially since in these grades "children are learning to read, and they cannot read slideshows."

Another common perception is that technology integration in early childhood classrooms is not always developmentally appropriate. In fact, all eight participants mentioned the words "developmentally appropriate" in their interviews. P5 wondered if the computer programs they were mandated to use by the school system were even developmentally appropriate. P1 and P2, both PreK teachers mentioned that most

activities done in the school with computers were not developmentally appropriate, and

P1 even mentioned that this is why it was difficult to teach digitally during the school

shut down. P4, P6, and P8 discussed how children at these ages need to be working

together and how technology integration often hinders collaboration. Digital play was

mentioned by several of the participants, but it was mainly to question how students were

supposed to actually "play" with technology. P2 discussed the importance of actual play

and disclosed that she thought technology might actually take away from the playtime

which was a needed activity in early childhood classrooms.

Theme 2: Teacher Self-Efficacy

This theme dealt with the participants beliefs about their own ability to integrate

technology in the classroom. Question 6 on the questionnaire asked, "If there are

technology activities that you would like to use but do not, what do you think is

preventing you from using these activities in your classroom?" Each of the eight

participants indicated that the thing that was preventing them was that they simply did not

know how.

While the school system is a Google Reference District that has been recognized

for its efforts in utilizing G Suite for Education applications across the district and has a

multitude of 1:1 Chromebook classes, at Southern Peach School District, none of these

1:1 classrooms are in grades PreK-2nd grade. Because of this fact, the participants feel

their ability to integrate technology is less compared to their counterparts in the

remaining grades in the school—grades three through five. In the interview, when asked

question five concerning what motivates her to use technology, P8 stated, "I just don't

actually feel motivated to use it at all because I'm not confident using technology. I don't think I know how to show my kids how to use it, so I just don't."

All participants mentioned that while they feel confident in using technology on a personal basis, they are not comfortable using it with their students. Besides the school prescribed computer programs, they cannot figure out how to make it work in their classrooms. P5 shared, "I hear about the teachers on the other side of the school building (grades 3-5) using all this technology in the classroom and hear about their kids making presentations and videos, but I don't have a clue how I would do that with my students." While they all feel competent using technology for organization and personal tasks, they do not feel competent having their students use the technology for instructional tasks.

Theme 3: External Barriers to Technology Integration

This theme dealt with the external barriers to technology integration for the participants at Southern Peach School District. Question 6 on the questionnaire asked, "If there are technology activities that you would like to use but do not, what do you think is preventing you from using these activities in your classroom?" This question, in conjunction with the interviews, created a list of external barriers that are influencing the integration of technology in Pre-K through 2nd grade classrooms at Southern Peach School District. The external barriers are lack of access and lack of training.

Every single participant mentioned that they do not have enough devices to integrate technology beyond using them as a center for school mandated computer programs. As mentioned earlier, the school system has a 1:1 Chromebook initiative, and none of these participants are in this project. Three participants mentioned that they

applied but were denied entrance into the project, and each of these participants noted
that they felt their application might have been lacking because they had only ever had
three or four computers in their classroom at a time, so they did not have the knowledge
to adequately complete the application for the initiative. This directly relates to the next
external barrier—lack of training.

When asked Question 9 during the interview, "Do you perceive yourself to be
knowledgeable about proper integration of technology in early childhood classrooms?"
all eight participants answered with a resounding "No!" Each said they have not had
much training in integrating technology in the classrooms. Several mentioned their
computer courses during college, and two mentioned Teachers Teaching Teachers, a set
of trainings that occurs at the school system level occasionally. Teachers are given a
menu and allowed to choose three sessions to attend that are led by their colleagues. P2
stated, "Sometimes, there are technology related activities, but most of the time, I don't
think they pertain to my class, and if they do, they don't last long enough to learn
anything substantial". P2 mentioned that there is little to no professional development
anymore because there is no room in the budget.

Theme 4: Benefits of Technology Integration

This theme dealt with the perceived benefits of technology by the participants in
the study. Questions three, five, and seven from the interview protocol elicited responses
from the participants that made it clear that even if they are not fully utilizing technology
to its greatest potential in their classrooms, all participants are aware of the benefits.

P1, 2, 3, 5, 6, and 7 noted technology's ability to engage all students—even the youngest ones. While they are not using it like they would like, they know that their students are using technology in some form at home. P1 noted, "My kids talk about using iPads and phones at home. I know they are on them all the time, and they play games and stuff on them. I wish I could engage them like those things do."

P1, 3, 5, 6, 7, and 8 mentioned that technology can enhance students' creativity. They discussed programs that allow students to draw and create, and all of these participants mentioned seeing the products of the older students in the school who participate in the 1:1 initiative. "The stuff these kids come up with. I see it all over our school's FaceBook page and on the monitors in the lunchroom. It's fantastic. So creative! I wish my kids could do that."

Increases in reading and writing were named as a benefit by P1, 2, 3, 5, and 8. Several of the participants mentioned that they had noticed that the older students in the initiative could read on their Chromebooks and respond electronically. They felt this allowed them to read more than their peers who were just reading books they checked out from the media center. As for writing, P5 stated, "I've talked with the teachers in the upper grades during vertical alignment meetings, and it seems that these kids write more when they get to type them." P2 noted, "It's important that these kids use technology when writing. They are going to be using it for their rest of their lives to write papers."

Theme 5: Technology as a Means to Present Lessons

Theme 5 dealt with the main way each of the participants integrates technology in their classrooms—by using it to present lessons. Question 2 on the questionnaire and

question 4 on the interview protocol prompted all participants to state that the main way

they used technology was to present lessons to their students. They cited displaying

websites on the board, playing music videos with lyrics, and using slideshow applications

to present instructional lessons. They also named the SmartBoard as being a tool that was

useful. They all prefer to write on it rather than the whiteboard, mainly because the

SmartBoard is attached to their whiteboards and takes up much of the space.

Theme 6: Distance Learning Challenges

Theme 6 dealt with the distance learning challenges these participants

experienced as a result of the COVID-19 pandemic. While this study was planned before

the pandemic, interviews took place four months after schools shut down on March 13,

2020, and all school systems in the state of Georgia were shut down. Southern Peach

School District chose to continue school virtually and provide packets of instruction for

those students with no internet access. Participants discussed their frustration with

distance learning and the pandemic when asked Questions 6, 8, and 9.

Each of the participants mentioned that when the pandemic began and they were

forced to go to distance learning, they had no knowledge of how to teach virtually. While

the school is part of a Google Reference District, and all the 1:11 Chromebook classes

have created Google Classrooms, none of these participants had ever even created a

Google Classroom. In fact, they all had trouble when first trying to create one in March

because their students were not given rights to Google Classroom. "The administrator

had never opened up the option for Google Classroom for students in grades PreK

through second grades because none of us had Chromebooks. We didn't need Google

Classroom." Four of the participants noted that they had to email the helpdesk (the school's technology aid request) multiple times before they could even get their students added. Six of the participants said they called or video chatted a colleague in an upper grade to get help with setting up their classrooms.

Even after they set up their Google Classrooms, all the participants still said they had very little idea about how to get started with distance learning. In fact each of the eight participants used the word "clueless" to describe their thoughts when beginning to teach virtually. Most of the participants mentioned uploading videos they had found online of storybooks being read aloud. P6 stated, "I wanted to create lessons that were engaging and kept the children learning, but I didn't know how. I didn't know where to begin." P1 said, "I really think if I knew how to do all this technology stuff, my kids wouldn't have suffered when corona shut down the schools. I didn't know what to do."

Each of the eight participants admitted to not taking any grades. One reason cited was that students were not being provided with adequate instruction to learn material, so the participants did not feel it was appropriate to take grades. Another was that students were not completing the assignments because they did not know how to use the applications, and neither did their parents or guardians. The greatest reason given was that the participants were simply not knowledgeable enough to even know how to take grades from the applications.

All of the participants mentioned that a human element was missing from virtual learning, and they all tried to have virtual meetings with their students. This was problematic because the teachers had never used the application to have meetings, there

was no training provided to teachers in order to have the meetings, students were unfamiliar with the application for the meetings, and students did not attend the meetings.

The concluding thought from every single one of the participants was that if school returned to normal and went back face-to-face during the pandemic, they would like to be included in the 1:1 Chromebook Initiative. They all felt like the pandemic would last longer and there might be times when the school would have to return to virtual learning, and they wanted to be prepared as well as prepare their students.

Evidence of Trustworthiness

Qualitative studies must maintain trustworthiness. To do so, they have to demonstrate credibility, ensure the study is transferable, sustain dependability, and uphold confirmability. There is evidence that this study is trustworthy and meets all these criteria.

Credibility

This qualitative study used triangulation to ensure credibility. I used questionnaires, interviews, and field notes from interviews to triangulate the data. Eight interviews were conducted, and they were recorded and transcribed to make sure they were valid and credible sources. Additionally, I conducted member checks by providing participants with the findings of my study, and I allowed them to determine if their thoughts and experiences were accurately identified. All participants indicated that my findings accurately portrayed their perspectives.

Transferability

For my study, I demonstrated transferability by providing rich descriptions about the participants, contexts, and procedures so that another researcher would be able to use my findings to conduct more research. I created these in-depth descriptions by collecting a variety of data through researcher-designed questionnaires and semistructured interviews. I transcribed the data and analyzed it through first and second cycle coding using elemental methods including descriptive, process, and initial coding. The rich data provided from this ensures that researchers will be able to compare my study to others and find similarities in the research questions, populations, and setting.

Dependability

To make sure my study was dependable, I used data from questionnaires, interviews, and field notes to triangulate data. I also used a code-recode strategy (see Saldaña, 2015), using both first and second cycle coding. To limit bias, I kept a reflexive journal throughout the study. I made my own notes about my feelings during the study because I was researching my own work environment and did not want to put my personal feelings in the study.

Confirmability

I needed to maintain confirmability so that my study would be objective. In order to establish confirmability, I kept a reflexive journal. This allowed me to make note of my own personal experiences throughout the study and read and reread it to make sure that I was not letting my own beliefs and experiences impact the research. Keeping this journal made me very cognizant of my personal beliefs and allowed me to keep a very

objective view which was sometimes difficult because I was conducting research in my own school.

Summary

The purpose of my study was to explore how and why early childhood teachers chose technology activities to integrate into their instruction. The research question for this study was: What influences the decisions early childhood educators make when choosing the types of technology activities to integrate in the classroom? Six themes about technology integration in early childhood education arose from this study. They were as follows:

- teacher perceptions of technology integration

- teacher self-efficacy

- external barriers to technology integration

- benefits of technology integration

- technology as a means to present lessons

- distance learning challenges

Each of these themes related to the participants' experiences with incorporating technology in early childhood settings.

In Chapter 5, I will reiterate the purpose and nature of the study. Additionally, I will discuss why the study was conducted and interpret the findings. Key findings will be compared to the literature review and conceptual framework. Limitations of the study, recommendations for future research, and implications for social change will also be discussed.

Chapter 5: Discussion, Conclusions, and Recommendations

The purpose of this qualitative study was to investigate how and why early childhood teachers chose technology activities to integrate into their instruction and to explore their perspectives and beliefs related to technology. I researched eight early childhood educators at the Southern Peach School District. I collected data through researcher-designed questionnaires and recorded interviews, both which were created by using background literature and aligned with the research question. A review of the literature revealed that while there is much research about the benefits of technology integration in early childhood classrooms, there was little research about how and why early childhood educators chose technology activities to incorporate in their classrooms. Accordingly, a gap in research was created regarding the factors that affect the choices of technology instructional activities that early childhood teachers use with their students. A study was needed on what influenced the decisions early childhood educators made when choosing the types of technology activities to integrate into their classrooms.

Data from the questionnaires and interviews were analyzed using first and second cycle coding, and six key themes emerged from this study. These themes were necessary to the key findings for the research question: What influences the decisions early childhood educators make when choosing the types of technology activities to integrate in the classroom? Based on the data and themes, there are several key findings for this study. They are as follows: (a) Early childhood educators choose technology activities based on the perceived benefits of integrating technology in the classroom, (b) early childhood teachers often do not integrate technology activities in the classroom because

they do not feel they are always developmentally appropriate, (c) choices in technology integration in early childhood classrooms are affected by the self-efficacy beliefs of early childhood teachers, (d) external barriers affect the types of technology integrated in early childhood classrooms, and (e) early childhood teachers often do not integrate technology because they feel that it cannot replace the human element of teaching and should only be used to supplement the curriculum.

Interpretations of the Findings

Analyzing the data from the interviews and questionnaires produced six themes. From these six themes, key findings for this study were developed. They are as follows: (a) Early childhood teachers often do not integrate technology because they feel that it cannot replace the human element of teaching and should only be used to supplement the curriculum, (b) early childhood teachers often do not integrate technology activities in the classroom because they do not feel they are always developmentally appropriate, (c) choices in technology integration in early childhood classrooms are affected by the self-efficacy beliefs of early childhood teachers, (d) external barriers affect the types of technology integrated in early childhood classrooms, and (e) early childhood educators choose technology activities based on the perceived benefits of integrating technology in the classroom.

Benefits of Technology Integration

Technology is often integrated in classrooms largely due to its increasing use in everyday life (Hur et al. 2017; Neokleous, 2019). Even if this is a large reason why there is more technology in the classroom, the benefits of technology integration in classrooms

include increased student achievement (Hur et al, 2017; McDermott & Gormley, 2016; Rashid & Asghar, 2016; Tawafak et al., 2019; Zhuang & Xiao, 2018), greater student motivation (Retalis et al., 2018), and improved communication (McKnight et al., 2016; Xiong, 2019).

Increased Student Achievement

Over the past 20 years, much research has been conducted to quantify student achievement levels when integrating technology in the classroom. A considerable amount of research exists that indicates that technology has the ability to aid in increased student achievement levels (Dunn & Kennedy, 2019; Huang & Lin, 2017; Ige & Hlalele, 2017;Lin, 2019; Rashid & Asghar, 2016). This research demonstrates that using technology in the classroom can help increase achievement in all academic subjects (see Xiong, 2019). When measuring nontechnology users to those who use technology, those using technology have higher overall grade point average standardized test scores (Rashid & Asghar, 2016). While most of this research on student achievement as it relates to technology integration is generalized to secondary education, there is research that exists that demonstrates that technology integration by early childhood educators has a positive impact on the achievement levels of early childhood students (Safar et al., 2017; Thangamani & Eu, 2019).

The findings of this study confirmed the ability of technology to increase student achievement levels of early childhood students. Data from the interviews suggested that technology integration activities chosen by early childhood teachers increases reading scores because the students have a wider variety of reading material at their fingertips

when using electronic devices. According to the participants, a wider variety of reading

material affects the amount of daily reading of the students, which in turn increases their

overall reading achievement. Another area of increased student achievement noted by the

early childhood educators at Southern Peach School District was in writing skills. Data

from the interviews correlated with the study conducted by Williams and Bean (2019)

that discovered when using technology in the classroom when writing, students' amount

of writing increased as well as their overall writing composition skills.

Increased Student Motivation

Students in today's classrooms are classified as digital natives because they have

grown up using technology in all areas of their daily lives. Researchers have concluded

that this is a large reason why technology integration in classrooms increases student

motivation (List, 2019; Shtepura, 2018). Again, while most of this research has been

conducted with secondary students, research exists to prove that technology integration

activities are chosen by early childhood educators when they perceive them to cause an

increase in motivation among early childhood students (Miller, 2018; Ozturk & Ohi,

2018).

Data from this study confirmed that early childhood educators feel that

technology is beneficial because students are digital natives. Participants noted that

technology is being used by their students on a regular basis in their daily lives, and

because of this, they feel it is necessary to use technology to some degree in their

classrooms. Participants' responses were aligned with Miller's (2018) research that

showed that when early childhood students used technology to complete assignments,

they were more engaged and motivated to complete the assignments. This motivation affects the kinds and types of technology that early childhood educators choose to integrate in their classrooms.

Improved Communication

Improved communication is another benefit of technology integration in classrooms. Technology can encourage positive social interactions by allowing collaboration and group work. It also makes students more proficient with discussion skills (Domingo & Gargante, 2016; McKnight et al., 2016). When teachers use technology in the classroom, students can learn social norms and learn how to resolve conflicts (Berson et al., 2019). Additionally, technology integration in the classroom improves teacher-student communication (McKnight et al., 2016), which has also been seen even in early childhood settings (Gennari et al., 2020).

The research from the literature review noted that technology could increase communication skills because it encourages collaboration (Domingo & Gargante, 2016; McKnight et al., 2016); however, the findings of this study did not confirm this. In fact, data from this study indicated that technology usage in early childhood settings actually discouraged collaboration. Participants felt like early childhood students could not effectively communicate using technology, and this hindered collaboration. Likewise, the findings from Gennari et al. (2020) could not be confirmed. They proved that teacher-student communication could be improved by using technology in early childhood settings, but participants in this study found technology usage to interfere with their

communication with their students. In fact, during the pandemic, the teachers found it almost impossible to effectively communicate with their young students.

Encourages Creativity

Some studies have shown that technology integration in early childhood classrooms can encourage creativity (Magen-Nagar et al., 2019; Miller, 2018). This case study extended that knowledge base. According to the data, early childhood teachers perceive creativity as a benefit of technology integration and would like to integrate more activities in their classrooms to encourage such creativity.

Developmental Appropriateness

According to the literature review, many early childhood educators do not feel that technology integration in classrooms is developmentally appropriate because it does not fit in with a play-based pedagogy (Edwards, 2016). In fact, Aldhafeeri et al. (2016) concluded that 77% of early childhood educators felt this. This case study confirmed this perception. Each participant in this study stated that technology in early childhood classrooms was often not developmentally appropriate. This developmental inappropriateness caused a digital divide during school closures necessitated from the COVID-19 pandemic. Young students were simply incapable of manipulating the technology needed to complete assignments. This perception of developmental inappropriateness influences the amount and types of technology integration early childhood teachers choose for their classrooms.

Self-Efficacy Beliefs of Early Childhood Educators

This study was centered upon Bandura's (1977) social cognition theory. This theory, which is often used in educational settings, focuses on how the environment, one's own emotions, and cognition can influence a person's behavior (Bandura, 1977). One component of this theory is the idea that individuals create a belief system about their own abilities based on both planning and motivation (Bandura, 1997). Self-reflection is one way individuals create this belief system. Individuals think about their thought processes and change their behaviors and actions based on their own thinking. Self-efficacy is one type of self-reflection in which individual's perceptions of their abilities and characteristics direct thought processes. Self-efficacy is affected by failures, accomplishments, and comparing self to peers (Bandura, 1986, 1997).

While there is much research that has indicated that internal barriers affect the amount of technology usage made by teachers, there is little literature to describe how it affects the technology activities educators choose. There is an even a smaller amount of literature to describe how or if self-efficacy beliefs have an impact on technology integration, specifically in early childhood settings.

The data from this case study extend the body of literature about self-efficacy beliefs of teachers and how they correlate to technology integration in early childhood classrooms. Specifically data from the questionnaires showed that early childhood educators are not integrating certain technology activities because they have limiting self-efficacy beliefs. They are using technology as a means of presentation and to use prescribed computer programs mandated by the school system. Their self-efficacy is

affected because of comparison to peers. Early childhood teachers do not have the training necessary to integrate certain activities in their classrooms and are comparing themselves to their counterparts in the upper elementary grades within the same school. Inability to effectively use certain technology activities that require early childhood students to create products with technology or demonstrate higher order thinking skills are not being integrated because of the early childhood teachers' beliefs about their own abilities to use the same technology.

External Barriers

The literature review in Chapter 2 concluded that oftentimes teachers did not integrate certain technology activities due to external barriers. External barriers are factors outside the teacher's control. According to the current body of research the most common external factors that influence technology integration in classrooms are lack of access, lack of training, and lack of administrative support (Arikan et al., 2017; Vongkulluksn et al., 2018).

Lack of Access

Compared to upper elementary, middle, and secondary education, the ratio of technological devices to students is so low that early childhood educators are limited on the amount and types of technology activities that can be integrated in early childhood classrooms (Simard & Karsenti, 2016; Singhavi & Basargekar, 2019; Vongkulluksn et al., 2018). This lack of access was confirmed by this case study.

While the district being studied is part of a Google Reference District, and most classrooms within all three schools in the district are 1:1 Chromebook classrooms, no

early childhood classrooms in Southern Peach School District are part of this initiative, and—at most—each early childhood classroom has only four computers. This data suggests that early childhood teachers choose or do not choose technology activities to integrate in their classrooms largely due to lack of access.

Lack of Training

A lack of training is another external barrier that prevents teachers from implementing technology activities in their classrooms (Lan et al., 2015; Riojas-Cortez et al., 2019; Vongkulluksn et al., 2018). A study conducted by Arikan, Fernie, and Kantor (2017) showed that professional development had the ability to change the perspectives of early childhood teachers and give them more confidence in their abilities. The converse of this was confirmed by this case study. Participants questioned their ability to implement certain technology activities because they had not received the proper professional development to do so.

Lack of Administrative Support

Research indicates that even when teachers are afforded adequate training and have a wealth of available technology, a lack of administrative support can hinder technology implementation in classrooms (Choi & Yi, 2016; Vongkulluksn et al., 2018). There was no data from Southern Peach School District pertaining to this matter. No participants indicated that they had no administrative support. This does not mean it is not an issue; it was simply not discussed in this case study.

Technology Cannot Replace Teachers

This study was planned before the onset of the COVID-19 pandemic which led to ultimately closing schools around the nation in March 2020. The Chapter 2 literature study contains no research about the "human element" of teaching. It does not examine studies about teachers' perspectives about how technology cannot replace teachers in the classroom; yet, there is enough data from this case study to report that early childhood teachers often do not integrate technology because they feel that it cannot replace the human element of teaching and should only be used to supplement the curriculum.

<div align="center">

Limitations of the Study

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This study used a case study approach to explore how and why early childhood teachers choose technology activities to integrate into their instruction. The methodological choices included using purposeful criterion sampling to select eight participants to engage in questionnaires and interviews structured around the research question. The questionnaires were given by Google Forms as previously planned; however, the interview process had to be changed due to reasons beyond my control.

The initial plan for interviews was that they would be conducted face-to-face in a classroom of the principal's choosing at the Southern Peach Elementary School. The COVID-19 pandemic and school shutdowns did not allow this to occur. Using another venue for face-to-face interviews was not possible due to safety concerns. A change from face-to-face interviews to virtual interviews was made to account for these safety concerns. Changing the format of the interview did not change the credibility of the

interviews. The only limitation was that body language was not completely able to be determined from the virtual interviews.

All other plans were able to be followed as initially intended. Triangulation of data was still achieved to ensure both credibility and dependability. I was able to analyze the questionnaires, interviews, and field notes from interviews to provide rich descriptions of the data. First and second cycle coding was still used to ensure trustworthiness of data.

The COVID-19 pandemic affected how and where I conducted my interviews, which did not affect trustworthiness; however, the pandemic could have affected teacher viewpoints which could impact trustworthiness. This study was all about technology in the classroom which became a topic of conversation on the forefront of the nation as the COVID-19 affected educational policies and methods of instruction. There is no way to tell if teachers would have responded the same way had they not been in the middle of a crisis, and because of this, transferability may have been affected.

Another issue is that this study just examined the perspectives of eight early childhood teachers in a small, rural setting. The experiences and viewpoints of this study may not be representative of other populations, especially larger urban schools. While the study is set up to be easily transferable, the results of this study based on population may not be dependable.

<div align="center">**Recommendations**</div>

There are several recommendations for further research that are supported by this study. The first recommendation is to replicate this study using a similar sample of early

childhood teachers in different settings. The participants in this study represented teachers in rural southwest Georgia. Diverse settings should be used to obtain more data to confirm the findings.

Another recommendation is to use a larger participant sample. Only eight participants were selected for this study. More participants could provide richer data to support or invalidate the findings. Both of these recommendations would be best studied after the COVID-19 pandemic has concluded to ensure that viewpoints are not clouded by the crisis.

Finally, a mixed methods study could be completed to gain even more data about the beliefs of early childhood teachers about integrating technology in their classrooms. Qualitative data from interviews and questionnaires could still be obtained. Additionally, surveys with Likert scales to evaluate teachers' self-reported perceptions and attitudes about technology integration could be conducted as well as examining lesson plans for the frequency and type of technology activities integrated in early childhood classrooms.

Implications

The results for this study have the capacity for positive social change. While, technology is a tool that can be used in early childhood classrooms with great benefits, Smith, Burrow, Fite, and Guerra (2016) noted that it is not being used in meaningful ways in order to enhance instruction and maximize its fullest potential. The results of this study supported this idea. The participants at Southern Peach School District were able to note the benefits of technology in early childhood classrooms, yet, even they did not feel they were integrating it to gain the maximum benefit from the technology.

This study's results will be able to positively impact social change at the organizational level. This research highlighted the benefits of technology and the barriers and influences that affect technology integration in early childhood classrooms. Positive social change will occur in early childhood settings when early childhood educators are able to identify the influences that impede on technology integration in classrooms. Once educators are aware of their influences, they can work with their teams, administrators, and even school districts to create appropriate plans to implement in early childhood classrooms that will integrate technology in meaningful ways. When early childhood educators are able to effectively integrate technology in their classrooms that are developmentally appropriate, students will benefit, and achievement and engagement will increase.

Conclusions

The purpose of this was to explore how and why early childhood teachers choose technology activities to integrate into their instruction. The findings of this study add to the limited body of literature regarding the effective integration of technology in early childhood classrooms. The results of this study confirm that there are internal and external factors that influence such integration. While the teachers in the study realized the benefits of technology integration in early childhood settings, they often felt such integration was not always developmentally appropriate. The self-efficacy beliefs of early childhood educators were also noted as a huge influence on the amount and types of technology integrated. Several external barriers to integration were also noted. The two that were noted were lack of access to technology tools and lack of training.

This study used triangulation by examining questionnaires, interviews, and field notes. Member checks from participants in the study were also conducted. This study does offer some transferability and dependability but because I chose a case study, the findings can only be generalized to the group I was studying.

The potential for social change is great if used to influence other studies. This case study was designed to add to the body of literature pertaining to the influences of technology integration in early childhood settings. The findings were key in noting what influenced early childhood educators at Southern Peach School District when choosing technology activities. While further studies may not reveal the same influences, replicating this study will further add to the body of literature and potentially affect how and why early childhood educators integrate technology in their classrooms. When the early childhood educators integrate technology in meaningful ways, the students they teach will reap the benefits.

References

Aldhafeeri, F., Palaiologou, I., & Folorunsho, A. (2016). Integration of digital technologies into play-based pedagogy in Kuwaiti early childhood education: Teachers' views, attitudes and aptitudes. *International Journal of Early Years Education, 24*(3), 342–360. https://doi.org/10.1080/09669760.2016.1172477

Al Khateeb, M. A. M. (2019). Effect of mobile gaming on mathematical achievement among 4th Graders. *International Journal of Emerging Technologies in Learning, 14*(7), 4–17. https://doi.org/10.3991/ijet.v14i07.10315

Alt, D. (2018). Science teachers' conceptions of teaching and learning, ICT efficacy, ICT professional development and ICT practices enacted in their classrooms. *Teaching & Teacher Education, 73*, 141–150. https://doi.org/10.1016/j.tate.2018.03.020

Altun, D. (2019). Investigating pre-service early childhood education teachers' technological pedagogical content knowledge (TPACK) competencies regarding digital literacy skills and their technology attitudes and usage. *Journal of Education and Learning, 8*(1), 249–263. https://doi.org/10.5539/jel.v8n1p249

Arikan, A., Fernie, D., & Kantor, R. (2017). Supporting the professional development of early childhood teachers in Head Start: A case of acquiring technology proficiency. *Ilkogretim Online*, *16*(4), 1829-1849. https://doi.org/10.17051/ilkonline.2017.342996

Arnott, L. (2017). Framing technological experiences in the early years. *Digital Technologies and Learning in the Early Years*, 7-19. https://doi.org/10.4135/9781526414502.n2

Bandura, A. (1977). *Social learning theory*. Prentice-Hall.

Bandura, A. (1982). Self-efficacy mechanism in human agency. *American Psychologist, 37*, 122-147. https://www.uky.edu/~eushe2/Bandura/Bandura1982AP.pdf

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Prentice-Hall.

Bandura, A. (1991). Social cognitive theory of self-regulation. *Organizational Behavior and Human Decision Processes, 50*, 248--287. https://doi.org/10.1016/0749-5978(91)90022-L

Bandura, A. (1994). Self-efficacy. In V.S. Ramachaudran (Ed.), *Encyclopedia of human behavior*, *4*, 71-81. https://www.uky.edu/~eushe2/Bandura/Bandura1994EHB.pdf

Bandura, A. (1997). *Self-efficacy: The exercise of control*. Freeman.

Bandura A. (2005). *The evolution of social cognitive theory*. In K. G. Smith & M. A. Hitt (Eds.), Great minds in management (pp. 9-35). Oxford University Press.

Bandura, A. (2006). Towards a psychology of human agency. *Perspectives on Psychological Science, 1*, 164-180. http://www.uky.edu/~eushe2/Bandura/Bandura2006PPS.pdf

Berson, I. R., Murcia, K., Berson, M. J., Damjanovic, V., & McSporran, V. (2019). Tangible digital play in Australian and U.S. preschools. *Kappa Delta Pi Record, 55*(2), 78–84. https://doi.org/10.1080/00228958.2019.1580986

Boschman, F., McKenney, S., & Voogt, J. (2015). Exploring teachers' use of TPACK in design talk: The collaborative design of technology-rich early literacy

activities. *Computers & Education, 82*, 250–262.

https://doi.org/10.1080/00228958.2019.1580986

Bowen, J. A. & Watson, C. E. (2017). Teaching naked techniques: Levering research on

learning to improve the effectiveness of teaching. *Change: The Magazine of*

Higher Learning, 49(5), 26-35. https://doi.org/10.1080/00091383.2017.1366809

Castillo-Montoya, M. (2016). Preparing for interview research: The interview protocol

refinement framework. *The Qualitative Report, 21*(5), 811-831.

https://nsuworks.nova.edu/tqr/vol21/iss5/2

Charlotte, E., & Hagström, J. R. (2017). Qualitative questionnaires as a method for

information studies research. *Information Research, 22*(1), 1–11.

http://informationr.net/ir/22-1/colis/colis1639.html

Choi, J., & Yi, Y. (2016). Teachers' integration of multimodality into classroom practices

for English language learners. *TESOL Journal, 7*(2), 304–327.

https://doi.org/10.1002/tesj.204

Clements, D. H., & Sarama, J. (2016). Math, science, and technology in the early

grades. *Future of Children, 26*(2), 75–94. https://doi.org/10.1353/foc.2016.0013

Constantine, A., Różowa, P., Szostkowski, A., Ellis, J., & Roehrig, G. (2017). The "T" in

STEM: How elementary science teachers' beliefs of technology integration

translate to practice during a co-developed STEM unit. *Journal of Computers in*

Mathematics & Science Teaching, 36(4), 339–349.

Corbin, J. M., & Strauss, A. L. (2015). *Basics of qualitative research: Techniques and*

procedures for developing grounded theory. SAGE.

Creswell, J. W., & Creswell, J. D. (2017). Research design: *Qualitative, quantitative, and mixed methods approaches*. SAGE Publications.

Creswell, J. W., & Poth, C. N. (2017). *Qualitative inquiry and research design: Choosing among five approaches*. SAGE Publications.

Deaton, S. (2015). Social learning theory in the age of social media: Implications for educational practitioners. *Journal of Educational Technology, 12*(1), 1–6. https://doi.org/10.26634/jet.12.1.3430

Devi, B., Khandelwal, B., & Das, M. (2017). Application of Bandura's social cognitive theory in the technology enhanced, blended learning environment. *International Journal of Applied Research, 3*(1), 721-724. http://www.allresearchjournal.com/archives/2017/vol3issue1/PartJ/3-1-145-668.pdf

Domingo, M. G., & Garganté, A. B. (2016). Exploring the use of educational technology in primary education: Teachers' perception of mobile technology learning impacts and applications' use in the classroom. *Computers in Human Behavior, 56*, 21–28. https://doi.org/10.1016/j.chb.2015.11.023

Dong, C.(2018). Preschool teachers' perspectives and pedagogical practices: young children's use of ICT. *Early Child Development & Care, 188*(6), 635–650. https://doi-org.ezp.waldenulibrary.org/10.1080/03004430.2016.1226293

Dooly, M., Moore, E., Vallejo, C., & Research-publishing.net (France). (2017). *Research Ethics*. *Research-publishing.net*. Research-publishing.net. https://files.eric.ed.gov/fulltext/ED573618.pdf

Dunn, T. J. & Kennedy, M. . (2019). Technology enhanced learning in higher education; motivations, engagement and academic achievement. *Computers & Education, 137*, 104–113. https://doi.org/10.1016/j.compedu.2019.04.004

Edwards, S. (2016). New concepts of play and the problem of technology, digital media and popular-culture integration with play-based learning in early childhood education. *Technology, Pedagogy and Education, 25*(4), 513-532. http://doi:10.1080/1475939x.2015.1108929

Elas, N. I. B., Majid, F. B. A., & Narasuman, S. A. (2019). Development of Technological Pedagogical Content Knowledge (TPACK) for English Teachers: The validity and reliability. *International Journal of Emerging Technologies in Learning, 14*(20), 18–33. https://online-journals.org/index.php/i-jet/article/view/11456/5977

Farjon, D., Smits, A., & Voogt, J. (2019). Technology integration of pre-service teachers explained by attitudes and beliefs, competency, access, and experience. *Computers & Education, 130*, 81–93. https://doi.org/10.1016/j.compedu.2018.11.010

Francom, G. (2016). Barriers to technology use in large and small school districts. *Journal of Informational Technology Education Research*, 15, 577-591. http://www.jite.org/documents/Vol15/JITEv15ResearchP577-591Francom2800.pdf

Gennari, R., Melonio, A., & Rizvi, M. (2020). From TurnTalk to ClassTalk: the emergence of tangibles for class conversations in primary school

classrooms. *Behaviour & Information Technology, 39*(1), 88–107.

https://doi.org/10.1080/0144929X.2019.1614226

Hancock, D. R., & Algozzine, R. (2016). Doing case study research: A practical guide for

beginning researchers. New York: Teachers College Press.

Hardman, J. (2019). Towards a pedagogical model of teaching with ICTs for mathematics

attainment in primary school: A review of studies 2008-2018. *Heliyon, 5*(5),

e01726. https://doi.org/10.1016/j.heliyon.2019.e01726

Hartman, R. J., Townsend, M. B., & Jackson, M. (2019). Educators' perspectives of

technology integration into the classroom: A descriptive case study. *Journal of

Research in Innovative Teaching & Learning,* 1-14.

http://www.emeraldinsight.com/2397-7604.htm.

Halverson, L. R., & Graham, C. R. (2019). Learner engagement in blended learning

environments: A conceptual framework. *Online Learning, 23*(2), 145–178.

https://doi.org/10.24059/olj.v23i2.1481

Hietajärvi, L., Salmela-Aro, K., Tuominen, H., Hakkarainen, K., & Lonka, K. (2019).

Beyond screen time: Multidimensionality of socio-digital participation and

relations to academic well-being in three educational phases. *Computers in

Human Behavior*, 93, 13–24. https://doi.org/10.1016/j.chb.2018.11.049

Hesse-Biber, S. N. (2016). The practice of qualitative research: Engaging students in the

research process. SAGE.

Higgins, K. K., & BuShell, S. (2018). The effects on the student-teacher relationship in a one-to-one technology classroom. *Education & Information Technologies, 23*(3), 1069–1089. https://doi.org/10.1007/s10639-017-9648-4

Howard, S. & Gigliotti, A. (2016). Having a go: Looking at teachers' experience of risk-taking in technology integration. *Education & Information Technologies, 21*(5), 1351–1366. https://doi.org/10.1007/s10639-015-9386-4

Huang, Y.M. & Lin, P. H. (2017). Evaluating students' learning achievement and flow experience with tablet PCs based on AR and tangible technology in u-learning. *Library Hi Tech, 35*(4), 609–621. https://doi.org/10.1108/lht-01-2017-0023

Hur, J. W., Shannon, D., & Wolf, S. (2017). An investigation of relationships between internal and external factors affecting technology integration in classrooms. *Journal of Digital Learning in Teacher Education, 32*(3), 105–114. https://doi.org/10.1080/21532974.2016.1169959

Ige, O. & Hlalele, D. (2017). Effects of computer-aided and blended teaching strategies on students' achievement in civic education concepts in mountain learning ecologies. *Education & Information Technologies, 22*(6), 2693–2709. https://doi.org/10.1007/s10639-017-9598-x

Ihmeideh, F. & Al-Maadadi, F. (2018). Towards improving kindergarten teachers' practices regarding the integration of ICT into early years settings. *Asia-Pacific Education Researcher (Springer Science & Business Media B.V.), 27*(1), 65–78. https://doi.org/10.1007/s40299-017-0366-x

Janisse, H. C., Li, X., Bhavnagri, N. P., Esposito, C., & Stanton, B. (2018). A
    longitudinal study of the effect of computers on the cognitive development of
    low-income African American preschool children. *Early Education And
    Development*, *29*(2), 229-244.

Jeong, H. I., & Kim, Y. (2017). The acceptance of computer technology by teachers in
    early childhood education. *Interactive Learning Environments, 25*(4), 496-512.
    http://doi:10.1080/10494820.2016.1143376

Joo, Y.J., Park, S., & Lim, E. (2018). Factors influencing preservice teachers' intention to
    use technology: TPACK, teacher self-efficacy, and technology acceptance model.
    Educational Technology & Society, 2(3), 48-59.

Kim, K., Jain, S., Westhoff, G., & Rezabek, L. (2008). A quantitative exploration of
    preservice teachers' intent to use computer-based technology. *Journal of
    Instructional Psychology, 35*(3), 275–287.

Kozleski, E.B. (2017). The uses of qualitative research: Powerful methods to inform
    evidence-based practice in education. Sage Publication.

Lan, L., Worch, E, & Zhou, Y. & Aguiton, R. (2015). How and why digital generation
    teachers use technology in the classroom: An explanatory sequential mixed
    methods study. *International Journal for the Scholarship of Teaching &
    Learning, 9*(2), 1–9. https://doi.org/10.20429/ijsotl.2015.090209

Lawson, A. (2019). A conceptual framework for exploring voluntary stewardship
    programs for land managers as a tool of New Environmental

Governance. *Australian Journal of Environmental Management, 26*(2), 137–155. https://doi.org/10.1080/14486563.2019.1599741

Li, Y., Yang, H. H., & MacLeod, J. (2019). Preferences toward the constructivist smart classroom learning environment: examining pre-service teachers' connectedness. *Interactive Learning Environments*, *27*(3), 349–362. https://doi.org/10.1080/10494820.2018.1474232

Lin, Y.T. (2019). Impacts of a flipped classroom with a smart learning diagnosis system on students' learning performance, perception, and problem solving ability in a software engineering course. *Computers in Human Behavior, 95*, 187–196. https://doi.org/10.1016/j.chb.2018.11.036

Lisenbee, P.S. (2016). Generation gap between students' needs and teachers' use of technology in classrooms. *Journal of Literacy and Technology, 17*(3), 99-123. http://www.literacyandtechnology.org/uploads/1/3/6/8/136889/jlt_v16_3_lisenbee.pdf

List, A. (2019). Defining digital literacy development: An examination of pre-service teachers' beliefs. *Computers & Education, 138*, 146–158. https://doi.org/10.1016/j.compedu.2019.03.009

Magen-Nagar, N., & Firstater, E. (2019). The obstacles to ICT implementation in the kindergarten environment: Kindergarten teachers' beliefs. *Journal of Research in Childhood Education, 33*(2), 165–179. https://doi.org/10.1080/02568543.2019.1577769

Mammadov, S., Cross, T. L. ., & Ward, T. J.(2018). The big five personality predictors of

    academic achievement in gifted students: Mediation by self-regulatory efficacy

    and academic motivation. *High Ability Studies, 29*(2), 111–133.

    https://doi.org/10.1080/13598139.2018.1489222

Mamutovic, A. & Vujovic, M. (2018). Interactive digital media in preschool

    age. *ELearning & Software for Education, 4*, 185–192

Mantilla, A. & Edwards, S. (2019). Digital technology use by and with young children: A

    systematic review for the Statement on Young Children and Digital

    Technologies. *Australasian Journal of Early Childhood, 44*(2), 182–195.

    https://doi.org/10.1177/1836939119832744

McDermott, P. & Gormley, K. A. (2016). Teachers' use of technology in elementary

    reading lessons. *Reading Psychology, 37*(1), 121–146.

    https://doi.org/10.1080/02702711.2015.1009592

McKnight, K., O'Malley, K., Ruzic, R., Horsley, M. K., Franey, J. J., & Bassett, K.

    (2016). Teaching in a digital age: How educators use technology to improve

    student learning. *Journal of Research on Technology in Education, 48*(3), 194–

    211. https://doi.org/10.1080/15391523.2016.1175856

Meguid, E., & Collins, M. (2017). Students' perceptions of lecturing approaches:

    Traditional versus interactive teaching. *Advances in Medical Education and

    Practice*, 8, 229–241. https://doi.org/10.2147/amep.s131851

Merriam, S.B. & Tisdell, E.J. (2016). *Qualitative research: A guide to design and

    implementation* (4th ed.) Jossey-Bass.

Mertala, P. (2019). Teachers' beliefs about technology integration in early childhood education: A meta-ethnographical synthesis of qualitative research. *Computers in Human Behavior, 101*, 334–349. https://doi.org/10.35542/osf.io/gur6z

Miller, T. (2018). Developing numeracy skills using interactive technology in a play-based learning environment. *International Journal of STEM Education, 5*. https://doi.org/10.1186/s40594-018-0135-2

Mourlam, D. J., Strouse, G. A., Newland, L.A., & Lin, H. (2019). Can they do it? A comparison of teacher candidates' beliefs and preschoolers' actual skills with digital technology and media. *Computers & Education, 129*, 82–91. https://doi.org/10.1016/j.compedu.2018.10.016

Mustola, M., Koivula, M., Turja, L., & Laakso, M. (2018). Reconsidering passivity and activity in children's digital play. Advances in Mechanical Engineering (Sage Publications Inc.), 10(1), 237-254. http://doi:10.1177/1461444816661550

Neokleous, G. (2019). Interpreting technologically fluent classrooms: Digital natives' attitudes towards the use of technology in primary schools in Norway. Research-publishing.net. https://doi.org/10.14705/rpnet.2019.28.874

Nicol, A. A. M, Owens, S. M., Le Coze, S. S. C. L., MacIntyre, A., & Eastwood, C. (2018). Comparison of high-technology active learning and low-technology active learning classrooms. Active Learning in Higher Education, 19(3), 253–265. https://doi.org/10.1177/1469787417731176

Nikolopoulou, K., & Gialamas, V. G. (2015). Barriers to the integration of computers in early childhood settings: Teachers' perspectives. *Education & Information Technologies*, *20*(2), 285-301. http://doi:10.1007/s10639-013-9281-9

Nkosi, S.S., Sibanda, R., & Katrodia, A. (2019) Mobile technology as a learning tool in the academic environment. *Journal of Economics and Behavioral Studies, 11*(2), 92-102. https://doi.org/10.22610/jebs.v11i2(J).2823

Oakley, G., Wildy, H., & Berman, Y. (2018). Multimodal digital text creation using tablets and open-ended creative apps to improve the literacy learning of children in early childhood classrooms. *Journal of Early Childhood Literacy*. http://doi:10.1177/1468798418779171

O'Byrne, W., & Pytash, K. (2017). Becoming literate digitally in a digitally literate environment of their own. *Journal of Adolescent & Adult Literacy, 60*(5), 499-504. http://doi:10.1002/jaal.595

Okumuş, S., Lewis, L., Wiebe, E., & Hollebrands, K. (2016). Utility and usability as factors influencing teacher decisions about software integration. *Educational Technology Research & Development, 64*(6), 1227–1249. https://doi.org/10.1007/s11423-016-9455-4

Ozturk, G. & Ohi, S. (2018). Understanding young children's attitudes towards reading in relation to their digital literacy activities at home. *Journal of Early Childhood Research, 16*(4), 393–406. https://doi.org/10.1177/1476718x18792684

Papadakis, S., Kalogiannakis, M., & Zaranis, N. (2018). Educational apps from the
   Android Google Play for Greek preschoolers: A systematic review. *Computers &
   Education, 116*, 139–160. https://doi.org/10.1016/j.compedu.2017.09.007

Padilla-Díaz, M. (2015). Phenomenology in educational qualitative research: philosophy
   as science or philosophical science? *Educational Excellence, 1*(2), 101-110.

Patton, M. Q. (2015). Qualitative research & evaluation methods: Integrating theory and
   practice (4th ed.). Sage.

Pyrczak, F., & Bruce, R. R. (2016). Writing empirical research reports: a basic guide for
   students of the social and behavioral sciences. 5th ed. Pyrczak Pub.

Quesenberry, A. C., Mustian, A. L., & Clark-Bischke, C. (2016). Tuning in: Strategies
   for integrating technology into social skills instruction in preschool and
   kindergarten. *Young Children, 71*(1), 74-80.

Rashid, T. & Asghar, H. M. (2016). Technology use, self-directed learning, student
   engagement and academic performance: Examining the interrelations. *Computers
   in Human Behavior*, 63, 604–612. https://doi.org/10.1016/j.chb.2016.05.084

Ravitch, S. M., & Carl, N. M. (2016). *Qualitative research: Bridging the conceptual,
   theoretical, and methodological*. Sage Publications.

Reigeluth, C.M., Beatty, B., & Myers, R. (2016). *The learner-centered paradigm of
   instruction*. In C.M. Reigeluth, B. Beatty, & R. Myers (Eds.). Instructional design
   theories and models: The learner-centered paradigm of education. Routledge.

Retalis, S., Paraskeva, F., Alexiou, A., Litou, Z., Sbrini, T., & Limperaki, Y. (2018).
   Leveraging the 1:1 iPad approach for enhanced learning in the

classroom. *Educational Media International, 55*(3), 213–230.

https://doi.org/10.1080/09523987.2018.1512463

Riojas-Cortez, M., Montemayor, A., & Leveridge, T. (2019). Choosing the right app for

preschoolers: Challenges and solutions. *Childhood Education, 95*(4), 56–62.

https://doi.org/10.1080/00094056.2019.1638717

Roussinos, D., & Jimoyiannis, A. (2019). Examining primary education teachers'

perceptions of TPACK and the related educational context factors. *Journal of*

Research on Technology in Education, 51(4), 377–397.

https://doi.org/10.1080/15391523.2019.1666323

Safar, A. H., Al-Jafar, A. A., & Al-Yousefi, Z. H. (2017). The effectiveness of using

augmented reality apps in teaching the English alphabet to kindergarten children:

A case study in the state of Kuwait. *EURASIA Journal of Mathematics, Science &*

Technology Education, 13(2), 417–440.

https://doi.org/10.12973/eurasia.2017.00624a

Saldaña, J. (2015). *The coding manual for qualitative researchers*. Sage Publication.

Saunders, M. N. K., Lewis, P., & Thornhill, A. (2015). *Research methods for business*

students (7th ed.). Pearson Education.

Shtepura, A. (2018). The impact of digital technology on digital natives' learning:

American outlook. *Comparative Professional Pedagogy*, *8*(2), 128–133.

https://doi.org/10.2478/rpp-2018-0029

Simard, S. S., & Karsenti, T. (2016). A quantitative and qualitative inquiry into future

teachers' use of information and communications technology to develop students'

information literacy skills. *Canadian Journal of Learning & Technology, 42*(5), 1–23. https://doi.org/10.21432/t2dw5k

Singhavi, C., & Basargekar, P. (2019). Barriers perceived by teachers for use of information and communication technology (ICT) in the classroom. *International Journal of Education & Development Using Information & Communication Technology, 15*(2), 62–78.

Sinker, R. (2018). Digital technologies in early childhood art: enabling playful experiences. *Educational Review*, *70*(2), 255-257. http://doi:10.1080/00131911.2017.1358928

Smith, E. L., Parker, C. A., McKinney, D., & Grigg, J. (2018). Conditions and decisions of urban elementary teachers regarding instruction of STEM curriculum. *School Science & Mathematics, 118*(5), 156–168. https://doi.org/10.1111/ssm.12276

Smith, S., Burrow, L., Fite, K., & Guerra, L. (2016). Considering instructional appropriateness of technology integration into early childhood education. *International Journal of the Whole Child, 1*(2), 13–29.

Tang, K.Y., Li, M.C., Hsin, C.T. & Tsai, C.C. (2016). A co-citation network of young children's learning with technology. *Educational Technology & Society, 19* (3), 294-305. http://doi: 10.1007/s10763-015-9696-4

Tawafak, R. M., Romli, A., Malik, S. I., Shakir, M., & Farsi, G. A. (2019). A systematic review of personalized learning: Comparison between e-learning and learning by coursework program in Oman. *International Journal of Emerging Technologies in Learning, 14*(9), 93–104. https://doi.org/10.3991/ijet.v14i09.10421

Thangamani, U., & Eu, L. K. (2019). Students' achievement in symmetry of two dimensional shapes using Geometer's Sketchpad. *Malaysian Online Journal of Educational Sciences, 7*(1), 14–22.

Tondeur, J., Forkosh-Baruch, A., Prestridge, S., Albion, P. & Edirisinghe, S. (2016). Responding to challenges in teacher professional development for ICT integration in education. *Journal of Educational Technology & Society, 19*(3), 110–120.

Uluyol, Ç. & Şahin, S. (2016). Elementary school teachers' ICT use in the classroom and their motivators for using ICT. *British Journal of Educational Technology, 47*(1), 65–75. https://doi.org/10.1111/bjet.12220

Vongkulluksn, V. W., Xie, K., & Bowman, M. A. (2018). The role of value on teachers' internalization of external barriers and externalization of personal beliefs for classroom technology integration. *Computers & Education, 118*, 70–81. https://doi.org/10.1016/j.compedu.2017.11.009

Wang, C.J. (2019). Facilitating the emotional intelligence development of students: Use of technological pedagogical content knowledge (TPACK). *Journal of Hospitality, Leisure, Sport & Tourism Education (Elsevier Science)*, 25, N.PAG. https://doi.org/10.1016/j.jhlste.2019.100198

Williams, C., & Beam, S. (2019). Technology and writing: Review of research. *Computers & Education, 128*, 227–242.

Wright, J. M. (2014). Planning to meet the expanding volume of online learners: An examination of faculty motivation to teach online. *Educational Planning, 21*(4), 35–49.

Xiong, J. (2019). Application of multi-source data hybrid technology in navigation and communication technology. *International Journal of Online Engineering, 15*(1), 156–170. https://doi.org/10.3991/ijoe.v15i01.9775

Yildiz, H. (2019). Modeling of relations between k-12 teachers' TPACK levels and their technology integration self-efficacy, technology literacy levels, attitudes toward technology and usage objectives of social networks. *Interactive Learning Environments*. Yin, R. K. (2017). *Case study research and applications: Design and methods*. SAGE.

Young, J. J., Park, S., & Lim, E. (2018). Factors influencing preservice teachers' intention to use technology: TPACK, teacher self-efficacy, and technology acceptance model. *Journal of Educational Technology & Society, 21*(3), 48-59.

Zainuddin, Z., & Perera, C. J. (2019). Exploring students' competence, autonomy and relatedness in the flipped classroom pedagogical model. *Journal of Further & Higher Education*, *43*(1), 115–126. https://doi.org/10.1080/0309877x.2017.1356916

Zhuang, W., & Xiao, Q. (2018). Facilitate active learning: The role of perceived benefits of using technology. *Journal of Education for Business, 93*(3), 88–96. https://doi.org/10.1080/08832323.2018.1425281

Appendix A: Email of Invitation

My name is Crystal Crozier, and I am an Ed.D. candidate at Walden University, an accredited institute of higher learning. Additionally, I am a third grade teacher at Southern Peach Elementary School.

For my dissertation, I am conducting a study that describes how and why early childhood educators use technology in their classrooms and what influences their choices of technology activities employed. You have been invited to participate in this study because you are a teacher at Southern Peach Elementary School.

Please read the attached consent form which will explain your duties if chosen for the study. Please print and sign the consent form if you would like to participate and place in my box as soon as possible.

If you have any questions, feel free to reply to this email or call my room extension, 3109.

Thank you for your consideration.

Crystal Crozier

Appendix B: Technology Integration Questionnaire

I am conducting a research study on how and why early childhood educators integrate technology in their classrooms. Your views on technology integration in your classroom are being requested. The information you provide here will be treated confidentially.

1. How often do you use technology activities in your classroom?
2. What types of technology activities do you use in your classroom?
3. What types of technology do your students use in your classroom?
4. What factors do you consider when deciding what types of technology activities to use in your classroom?
5. List the technology activities (if any) that you would like to use in your classroom but have not.
6. If there are technology activities that you would like to use but do not, what do you think is preventing you from using these activities in your classroom?

Appendix C: Interview Protocol

Introduction:

Thanks for agreeing to meet with me. I am interviewing you because you are a teacher in grades preK through second grade at Southern Peach Elementary School who has been teaching for at least three years and have indicated that you already integrate technology in the classroom. I want to ask you some questions about how you use technology in your classroom. I will give you the questions first to review, and then I will begin recording the interview as you agreed on the consent form. Please respond to each question, and give as much detail as possible so I can gain a better understanding. Feel free to interrupt and ask clarifying questions as needed. I really appreciate your participation in this interview.

Interview Questions:

1. What grade do you teach?

2. How long have you been teaching this grade?

3. What are your beliefs about technology in the classroom?

4. Please describe the different ways you use technology in your classroom.

5. What motivates you to integrate technology in the ways you do?

6. How were you prepared to implement technology in your classroom? Did you have any special training?

7. What do you believe is the effect of technology on early childhood students?

8. Are there anyways in which you could use technology in your classroom better? Explain.

9. Do you perceive yourself to be knowledgeable about proper integration of technology in early childhood classrooms?

Closure:

Thank you so much for your participation. After I analyze the results of this interview, I will email you a draft by email. Please take a moment to review the draft and my findings and send me any comments you may have that could affect the credibility of my findings.